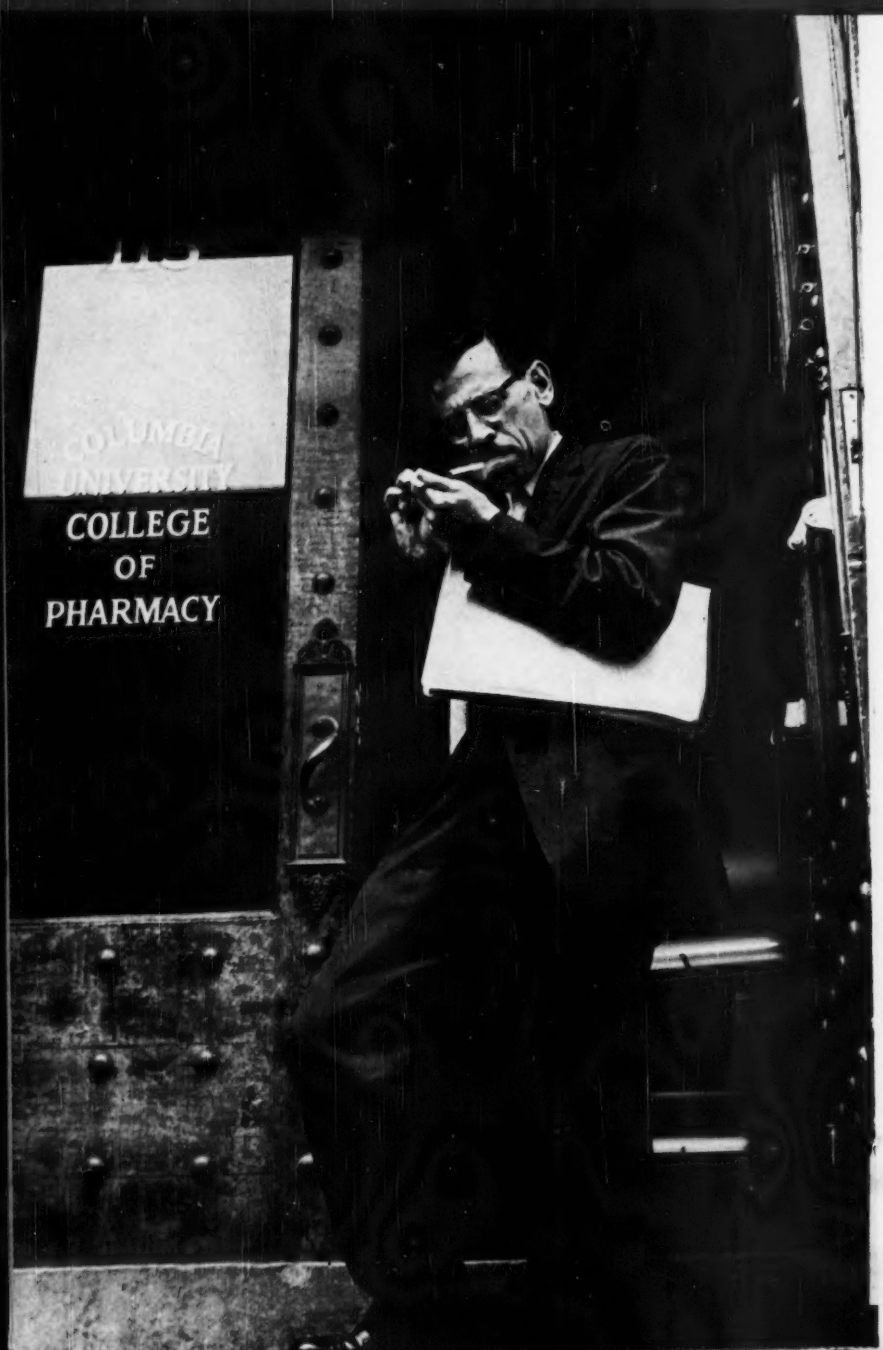
JULY 16, 1960

Chemical Week

A McGRAW-HILL PUBLICATION PRICE FIFTY CENTS

EUROPE'S CHALLENGE CW Report..p. 100



Expanding in step— synthetic rubber, nylon due for boosts . . . . . p. 32

Samples: old sales aid gets new scrutiny from cost-conscious management . . . p. 59

SPARE-TIME JOBS FOR RESEARCHERS? HERE'S CPI'S ATTITUDE . . . . . p. 47

Hyperpure silicon— process competition thins ranks of

STEVENS RICE
UNIVERSITY MICROFILMS
313 N 1ST ST
ANN ARBOR MICH



PHOSPHORIC ACID

75% and 80%
Food and Commercial Grades

85% N. F.

SODIUM PHOSPHATES

Hexaphos® Fosfodril® Sodaphos®
(Brands of Sodium Glassy Phosphate)

Disodium Phosphate
Trisodium Phosphate Monohydrate
Trisodium Phosphate Hemihydrate
Monosodium Phosphate
Trisodium Phosphate Anhydrous
Sodium Acid Pyrophosphate
Sodium Tripolyphosphate
Tetrasodium Pyrophosphate

POTASSIUM PHOSPHATES

Dipotassium Phosphate
Potassium Tripolyphosphate
Monopotassium Phosphate
Tripotassium Phosphate
Tetrapotassium Pyrophosphate

We safeguard the purity and clarity of our furnace acid right up to your plant door!

Using elemental phosphorus from our own modern electric furnaces, we closely control every step in production and delivery of phosphoric acid. Our privately maintained fleet of tank trailers, used exclusively for phosphoric acid, is an excellent demonstration of the extreme care we take.

In addition to bulk shipments in our own tank wagons, we provide a wide range of packing to suit your convenience. Throughout, stainless steel or special liners protect against contamination.

As a result you always receive high-purity, water-white phosphoric acid of consistently outstanding quality. What's more, with fully integrated production and three coast-to-coast plants, we assure all customers fast service and dependably stable supply.

Whatever your use for phosphoric acid... in foods, phosphatizing, bright-dipping, soil stabilization or fertilizers... we can supply the grade and form you need. We'll be glad to quote on phosphoric acid alone or in combination with phosphates.

fmc
FOOD MACHINERY AND CHEMICAL CORPORATION ®

Putting Ideas to Work

FOOD MACHINERY AND CHEMICAL CORPORATION

Mineral Products Division

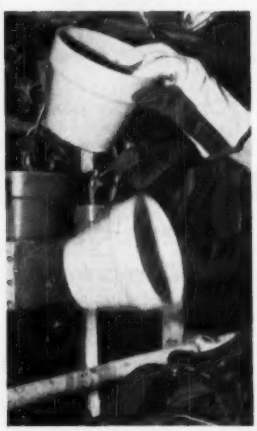
General Sales Offices:
161 E. 42nd STREET, NEW YORK 17

FOOD MACHINERY AND CHEMICAL CORPORATION



— as used to make better flower pots at Schacht Rubber Mfg. Co., Inc., Huntington, Indiana

Unbreakable and unbeatable—because it's made of PLIOFLEX!



Drop one of these flower pots, it bounces back for more. Use it for years, the bright color won't peel or change

The reason? It's molded of PLIOFLEX 1773, an oil-extended styrene/butadiene rubber by Goodyear.

Why PLIOFLEX 1773? The primary reasons are unusually light color and low cost. Also important are high uniformity and good physical properties which minimize rejects—a vital factor in a volume business. Then, too, its shipment in film-wrapped bales, protected by multiwall bags on nonreturnable pallets, keeps down handling costs and losses.

More information on PLIOFLEX, including the latest *Tech Book Bulletins,* is yours by writing Goodyear, Chemical Division, Dept. S-9417, Akron 16, Ohio.

GOODYEAR

CHEMICAL DIVISION

Plioflex—T. M. The Goodyear Tire & Rubber Company, Akron, Ohio

AA Quality:

AMMONIUM SILICOFLUORIDE

MAGNESIUM SILICOFLUORIDE

POTASSIUM SILICOFLUORIDE

SODIUM SILICOFLUORIDE

ZINC SILICOFLUORIDE

SILICOFLUORIDE MIXTURES



UNMATCHED IN SILICOFLUORIDES!

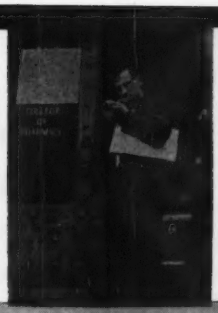
Our position in silicofluorides is simple; our production facilities are unmatched in number, capacity and quality. A complete line of AA Quality silicofluorides is available nationwide. We are well experienced in their large-quantity, high-quality production. Those who buy silicofluorides from us have reason to know that the AA Quality symbol applies to service and dependability as well as product analysis. Why not make our Chemical Division at least one of your sources for silicofluorides?

Chemical Division

The **American Agricultural Chemical** Company

100 Church Street
New York 7, New York

40 plants and offices



ON THE COVER: Ciba researcher Jack Cooper pauses on the steps of the Columbia College of Pharmacy, where he's helping prepare—on his own time, and with his employer's approval—the new U.S. Pharmacopoeia. Photo is by Walter Vecchio.

Chemical Week

Vol. 87, No. 3 JULY 16, 1960

7 **VIEWPOINT**— Does management ask too much of chemical market research?

9 **LETTERS-MEETINGS**

17 **BUSINESS NEWSLETTER**

32 New "synthetic-natural" rubber maker vies for share of wide-open market.

33 **Look for new competition in nylon merchandising as new producer steps in.**

34 Big aluminum project heralds bevy of CPI ventures for Greece.

34 Chief of Britain's Imperial Chemical Industries accuses U.S. producers of dumping.

35 El Paso refuels its financial tanks for further drive into petrochemicals.

35 Southwest Potash claims victory in potassium nitrate-for-fertilizer race.

37 **WASHINGTON NEWSLETTER**

39 **PRODUCTION—New dryers battle for synthetic rubber processing jobs.**

47 **RESEARCH**— Companies lower the bars to outside jobs for researchers.

50 Harvard's Woodward reports total synthesis of chlorophyll.

54 Filters aid diesel exhaust cleanup.

59 **SALES**— Companies seek cheaper ways of providing product samples.

64 **ENGINEERING**— Silicon makers push for lower-cost ways of making boron-free silicon.

70 Papermaking machinery solves latex-processing problem for Esso.

75 **TECHNOLOGY NEWSLETTER**

79 **SPECIALTIES—Toiletry makers see 65% sales growth in next decade.**

82 Britain's Beecham appears poised for bigger sales effort in U.S.

82 Imports of coal tar-derived specialties are increasing.

85 **ADMINISTRATION—U.S. Treasury studies industry's depreciation methods.**

85 Oil, Chemical & Atomic Workers union sets wage goals for oil negotiations.

86 ILO votes radiation protection standards.

91 **MARKETS**— Growing soda ash demand points up increasing importance of trona.

95 **CHEMICAL WEEK REPORT**—You in Europe: Guide for policy makers.

100 **MARKET NEWSLETTER**

112 **BUSINESS BENCHMARKS**

Chemical Week (including Chemical Specialties and Chemical Industries) is published weekly by McGraw-Hill Publishing Co., James H. McGraw (1860-1948), founder. EXECUTIVE, EDITORIAL, CIRCULATION AND ADVERTISING OFFICES: McGraw-Hill Building, 330 West 42nd St., New York 36, N. Y. Place of publication: 3rd and Hunting Park Ave., Philadelphia 40, Pa. Second class postage paid at Philadelphia. (See below for directions regarding subscriptions or change of address.) OFFICERS OF THE PUBLICATIONS DIVISION: Nelson L. Bond, president; Shelton Fisher, Wallace F. Traendly, senior vice-presidents; John R. Callaham, vice-president and editorial director; Joseph H. Allen, vice-president and director of advertising sales; A. R. Venezian, vice-president and circulation coordinator. OFFICERS OF THE CORPORATION: Donald C. McGraw, president; Joseph A. Gerardi, Hugh J. Kelly, Harry L. Waddell, executive vice-presidents; L. Keith Goodrich, vice-president and treasurer; John J. Cooke, secretary.

United States and United States possessions subscription rate for individuals in the field of the publication, $3 per year; single copies, 50¢. Foreign subscription rates per year: Canada, $4; other Western Hemisphere countries, $15; all others, $25, payable in advance. Printed in U.S.A.

Title registered in U.S. Patent Office, © Copyright 1960 by McGraw-Hill Publishing Co. Inc. All rights reserved.

UNCONDITIONAL GUARANTEE: the publisher, upon direct request from any subscriber to our New York office, agrees to refund the part of the subscription price applying to copies not yet mailed.

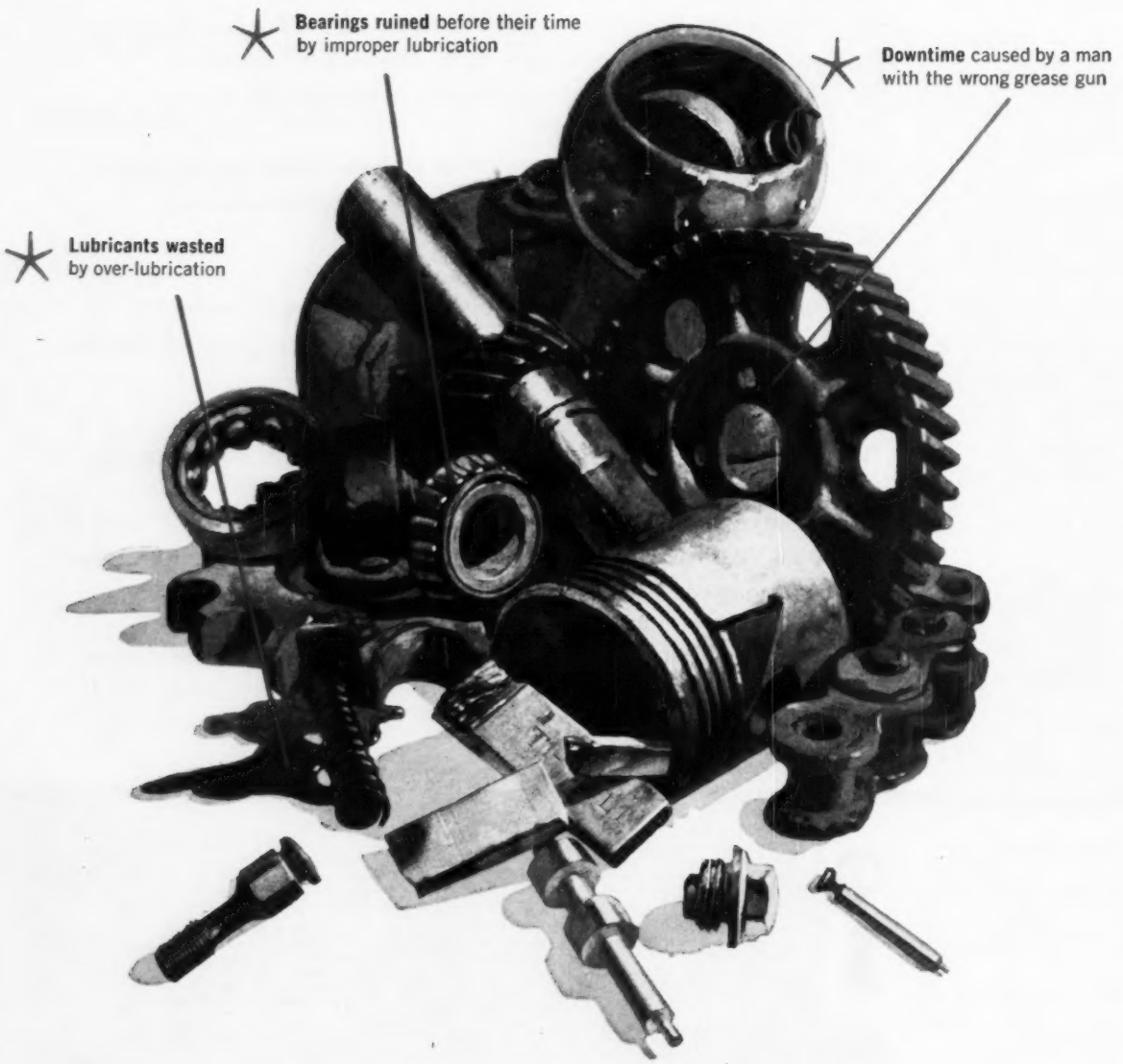
Subscriptions to Chemical Week are solicited from management men in the Chemical Process Industries in administration, production and plant operation, design and construction, research and development, sales and purchasing. Position, company connection and nature of company's business, products and approximate number of employees must be indicated on subscription application. Send to address shown below.

SEND SUBSCRIPTION CORRESPONDENCE AND CHANGE OF ADDRESS TO FULFILLMENT MANAGER, CHEMICAL WEEK, 330 WEST 42nd ST., NEW YORK 36, N. Y. SUBSCRIBERS SHOULD NOTIFY FULFILLMENT MANAGER PROMPTLY OF ANY CHANGE OF ADDRESS, GIVING OLD AS WELL AS NEW ADDRESS, AND INCLUDING POSTAL ZONE NUMBER, IF ANY. IF POSSIBLE, ENCLOSE AN ADDRESS LABEL FROM RECENT ISSUE OF CHEMICAL WEEK. PLEASE ALLOW ONE MONTH FOR CHANGE TO BECOME EFFECTIVE.

Postmaster: Please send Form 3579 to Chemical Week, 330 West 42nd St., New York 36, N.Y.

ANNOUNCING THE TEXACO "Stop Loss" Program

Created to starve a scrap pile at its source . . . and all it represents ★



LUBRICATION IS A MAJOR FACTOR IN COST CONTROL

Even though your plant is *already* an efficient operation, a Texaco "Stop Loss" Program can yield important savings in maintenance, production, purchasing and inventory.

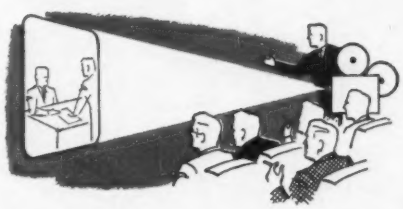
What it is; why it will work for you. The Texaco "Stop Loss" Program is a complete package specifically designed to modernize your lubrication practices—to keep pace with your updated production and marketing procedures. "Stop Loss" is based on our years of experience in organizing lubrication in the chemical industry.

If yours is an average chemical plant, the adoption of this program will actually show up on your profit sheet. That's because the savings from "Stop Loss" go *directly* into net profits.

Lubrication, far from being an expense item, is actually one of your most effective cost control tools!

HERE'S WHAT YOU NEED TO HELP STARVE YOUR SCRAP PILE

These components of the Texaco "Stop Loss" Program are available to interested plant groups:



1. New 20-minute sound-color film "Stop Loss with Organized Lubrication"—created to show the many opportunities for cost control through organized lubrication practices.



2. A Lubrication Control System that takes the guesswork out of lubrication scheduling. It costs almost nothing to install, yet can save as much as 15% of your maintenance costs.



3. A film "package" for various departments. This consists of educational films that cover the selection and application of greases, hydraulic oils, cuttings oils, etc.



4. Co-ordinated booklets on the film subjects plus many others that can be used as guides in specific areas.

We believe that a modern Texaco "Stop Loss" Program will produce a package of economies in your chemical plant.

MAKE YOUR RESERVATION TODAY
to see one of the year's most important management movies!

TEXACO
Throughout the United States
Canada • Latin America • West Africa

TEXACO INC., Dept. W-CP-40
135 East 42nd Street
New York 17, N. Y.

Please arrange a showing of "Stop Loss" at my plant.

Name_____

Title_____

(Please attach to your letterhead)

HOW *HERCULES* HELPS...



BUILD CANDLESTICK PARK TURF—The most important part of the San Francisco Giants' new, $15,000,000 ball park, is the turf. Turf on a baseball diamond must take a lot of punishment from both spikes and weather. Nevertheless, the field must be kept smooth for those fast ground balls and for players racing to field them. To keep the turf in peak condition, "Blue Chip Nitroform®" is used exclusively. Nitroform, Hercules' long lasting nitrogen fertilizer, is ideally suited to meet such demanding standards. Used directly or in mixed fertilizers, Nitroform gradually releases nitrogen for season-long, controlled feeding.



MAKE REFINISHING EASY—The tough job of refinishing office furniture is now an overnight operation. Office cabinets sprayed with lacquers based on Hercules® Nitrocellulose air dry in minutes, can be touched up and may be matched to any standard or decorator colors.



AROUND THE YARD—A handsome Pro-fax® polypropylene housing is the new symbol of quality in today's modern power mower. The Power Equipment Company has found Pro-fax to be virtually unbreakable and heat, moisture, gasoline, oil and grease resistant. Excellent sales benefits for value-conscious customers.



G60-6

HERCULES POWDER COMPANY
INCORPORATED
900 Market Street, Wilmington 99, Delaware

CHEMICAL MATERIALS FOR INDUSTRY

HERCULES

Chemical Week

Robert S. Muller ..... Publisher

Howard C. E. Johnson ..... Editor-in-Chief

Ralph R. Schulz ..... Managing Editor
Emil J. Mikity ..... Assistant Managing Editor
J. Robert Warren .... Assistant Managing Editor
Donald P. Burke ..... Associate Editor
Anthony J. Piombino ..... Associate Editor

DEPARTMENTS

Administration .... Cooper R. McCarthy, editor
F. Bryan Williams
Business News ..... Homer Starr, editor
Jane B. Armstrong
Engineering ..... Ryle Miller, editor
Foreign ..... Bruce Bendow, editor
Markets ..... Philip A. Cavalier, editor
Gary G. Reibsamen
Production ..... Herbert C. Short, editor
Research ..... Joseph F. Kalina, editor
Philip A. Untersee
Sales ..... Carl A. Hiester, editor
Walter E. Andrews
Specialties ..... Richard J. Callahan, editor
Marion L. Meade
Reports ..... Jorma Hyypia, editor
Vincent L. Marsilia

Copy ..... William Mullinack, editor
Kay Sarner, Renee Kleinkopf
Art ..... Robert T. Martinott, director
Richard Kluga; Forbes Linkhorn
Dolores Able
Buyers' Guide ..... Betsy L. Emery

REGIONAL EDITORS

Chicago ..... John M. Winton, editor
Nina Seawick
Houston ..... Thomas H. Arnold, editor
Wilma Cortines
San Francisco ..... Martin D. Robbins, editor
Terry Shaw

NATIONAL AND WORLD NEWS

Dexter M. Keezer ..... Economics
John Wilhelm ..... Director, News Bureaus

Domestic

Atlanta, B. F. Barnes; **Chicago**, Stewart Ramsey; **Cleveland**, Arthur Zimmerman; **Dallas**, Marvin Reid; **Detroit**, Donald MacDonald; **Los Angeles**, Kemp Anderson, Jr.; **San Francisco**, Jenness Keene; **Seattle**, Ray Bloomberg; **Washington**, George B. Bryant, Jr. Correspondents in 75 principal cities of the United States.

Foreign

Beirut, O. M. Marashian; **Bonn**, Morrie Helitzer; **Caracas**, John Pearson; **London**, John Shinn; **Melbourne**, Alicja Grobtuch; **Mexico City**, Peter Weaver; **Moscow**, Ernest Conine; **Paris**, Robert E. Farrell; **Rio de Janeiro**, Leslie Warren; **Tokyo**, Sol Sanders. Correspondents in 78 cities.

Knox Armstrong .... Advertising Sales Manager
Alvin J. Babkow ..... Business Manager
Fred E. Lesner ..... Sales Promotion Manager
John M. Pierce ..... Market Service Manager
Robert L. Maier ..... Advertising Makeup
Paul W. Erb ..... Circulation Manager
Frances Regan ..... Reprints
Advertising Salesmen ..... See Adv. Index

VIEWPOINT

How Good Is Market Research?

LONG-RANGE PLANNING is certainly more accurate today than it was 20 years ago, and a major reason is the competence and authority of market research. It was just 20 years ago that the Chemical Market Research Assn. was founded, and the intervening years have witnessed a marked enhancement of professional stature.

But despite the proliferation of highly sophisticated methods of market forecasting, almost every issue of CHEMICAL WEEK bears witness to the failure of more than one company—evidenced by overcapacity or drastic price cuts—to accurately gauge the tempo of demand.

It's as easy in business as it is in sports to be a Monday-morning quarterback and say what those companies should or should not have done to stay out of the spot in which they find themselves. It's sometimes forgotten that these companies are reaping the unhappy harvest of seeds sown long ago when information now available was only conjecture.

However, the management people responsible for under-utilized new plants, unsalable new products, and unsuccessful marketing campaigns cannot in good conscience pass the buck to market research without asking themselves if they weren't a contributory cause.

Too often, it seems to us, management is not conducting its market research along realistic lines. They're asking for too much too soon from their market researchers. As one of the prime information sources for these market researchers, we're sometimes amazed at the magnitude of the task assigned these fact-trackers for the time allotted.

Too-rigid deadlines can lead to two serious difficulties: a market researcher won't be able, in the time he has, to track down the most accurate information; and what is worse, he may accept the word of his most voluble source with fingers crossed.

Even if management does provide market researchers with the time they need to do a workmanlike job, they often make the mistake of trying to second-guess them by using other fact-finders, such as consultants or advertising agency personnel. This is not to derogate the useful functions served by either, but neither may be equipped with the special skills required of a trained market researcher. Would management turn the situation around and ask its market research group to hammer out a series of hard-hitting ads?

Getting reliable information is especially difficult in the chemical industry, which plays its cards much closer to the vest than the oil or steel industries, for example. We discussed this problem some months ago *(Viewpoint, Feb. 27, p. 7)*, conceding that some trade secrets are legitimate weapons in the competitive battle, but insisting that many so-called secrets can be discovered by resourceful research. The market man should have the authority—tempered with his own judgment—to yield up a piece of information about his own company in return for data he needs. A cautious but honest *quid pro quo* could often prevent an unprofitable investment of time and money.

To plan effectively, a company must give the market researcher its full confidence. It mustn't ask for the moon by a week from Wednesday. Finally, it must allow him discretion to trade information, thus enabling him to fill in the blank areas of the total picture.

IMPROVED PERFORMANCE

For a Whole Family of Vinyl Products

RCI PEROXIDOL 780 & 781

EPOXIDIZED PLASTICIZER-STABILIZERS



PEROXIDOL 780 is the lowest cost vinyl plasticizer-stabilizer sanctioned by the FDA for vinyl systems used in food packaging.

PEROXIDOL 781 has important properties for a wide variety of vinyl products; it offers excellent low temperature flexibility and viscosity stability.

These epoxidized plasticizer-stabilizers, with their optimum oxirane content and iodine value, will provide vinyl products with increased resistance to heat, light, weathering and water extraction. Their good wetting properties and low volatility assure speed in processing.

Every processor will be interested in *all the facts* about the economy, convenience and performance of RCI PEROXIDOLS. Write for full technical data today.

Creative Chemistry . . . Your Partner in Progress

RCI

REICHHOLD

Synthetic Resins • Chemical Colors • Industrial Adhesives • Phenol
Hydrochloric Acid • Formaldehyde • Phthalic Anhydride
Maleic Anhydride • Ortho-Phenylphenol • Sodium Sulfite
Pentaerythritol • Pentachlorophenol • Sodium Pentachlorophenate
Sulfuric Acid • Methanol

REICHHOLD CHEMICALS, INC.,
RCI BUILDING, WHITE PLAINS, N. Y.

LETTERS

Cyanamid's Sulfate

To THE EDITOR: The Market Newsletter (*May 28*) includes a statement "only remaining producers of true synthetic (ammonium) sulfate east of the Rockies are Phillips Chemical at Houston, Tex., and Northern Chemical Industries at Searsport, Me."

American Cyanamid's Fortier plant, located at New Orleans, has been and is now producing true synthetic ammonium sulfate from virgin sulfuric acid and ammonia. . . .

R. C. SARFATY
Industrial Chemicals Division
American Cyanamid Co.
New York

New Jersey Metals

To THE EDITOR: The news . . . relating to this company and Seaway Nickel Corp. (*June 11, p. 26*) was erroneous in part. . . .

New Jersey Metals Co. did not sell its assets to Seaway Steel Corp. of North Tonawanda, N.Y. Seaway Nickel is a new corporation formed for the purpose of taking over only the manufacturing operations, including the production of rolled nickel anodes and other metal products, of New Jersey Metals. Seaway Nickel will handle all sales of these manufactured products.

Some of the manufacturing equipment and related facilities of New Jersey Metals were transferred to Seaway Nickel.

New Jersey Metals will continue its trading operations in scrap metals and chemicals as heretofore. . . .

ALBERT KERZNER
President
New Jersey Metals Co.
Elizabeth, N.J.

Metallized Bridges

To THE EDITOR: Your article "Bridges Show Way to Cut Painting Costs" (*June 4, p. 79*) was particularly interesting to us. Our experience also shows that paint life can be increased many fold by providing a more corrosion-resistant base material. . . .Work . . . has been done in Great Britain on all principal bridges with zinc or aluminum.

Not only is the original paint coat given a much longer life, but also repainting is much easier, since there are no corrosion products to be removed. . . . Not . . . a single bridge erected in Great Britain in 10 years . . . has not been metallized.

The use of zinc or aluminum, of course, circumvents the problem of obtaining alloy steel during periods of nickel shortage.

RALPH F. STRIGLE, JR.
Vice-President
Akron Sand Blast & Metallizing Co.
Barberton, O.

MEETINGS

Gordon Research Conferences at Colby Junior College, New London, N.H.—July 18-22, corrosion; July 25-29, separation and purification; Aug. 1-5, instrumentation; Aug. 8-12, food and nutrition; Aug. 15-19, medicinal chemistry; Aug. 22-26, catalysis; Aug. 29-Sept. 2, cancer.

Gordon Research Conferences at New Hampton School, New Hampton, N.H.—July 18-22, radiation chemistry; July 25-29, organic reactions and processes; Aug. 1-5, steroids and other natural products; Aug. 8-12, organic coatings; Aug. 15-19, analytical chemistry; Aug. 22-26, inorganic chemistry; Aug. 29-Sept. 2, adhesion.

Gordon Research Conferences at Kimball Union Academy, Meriden, N.H.—July 18-22, high pressure research; July 25-29, chemistry and metallurgy of semiconductors; Aug. 1-5, solid-state studies in ceramics; Aug. 8-12, chemistry and physics of solids: point defects; Aug. 15-19, toxicology and safety evaluations; Aug. 22-26, infrared spectroscopy; Aug. 29-Sept. 2, high-temperature chemistry: kinetics of vaporization and condensation processes.

Columbia University Industrial Research Conference, Arden House, Harriman, N.Y., Aug. 7-13.

Heat Transfer Conference and Exhibit, Statler-Hilton Hotel, Buffalo, N.Y., Aug. 15-17.

Cryogenic Engineering Conference, University of Colorado, Boulder, Colo., Aug. 22-24.

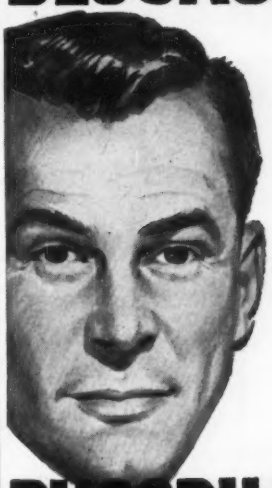
Technical Assn. of the Pulp and Paper Industry, alkaline pulping conference, Multnomah Hotel, Portland, Ore., Aug. 22-24.

Joint Automatic Control Conference, Massachusetts Institute of Technology, Cambridge, Mass., Sept. 7-9.

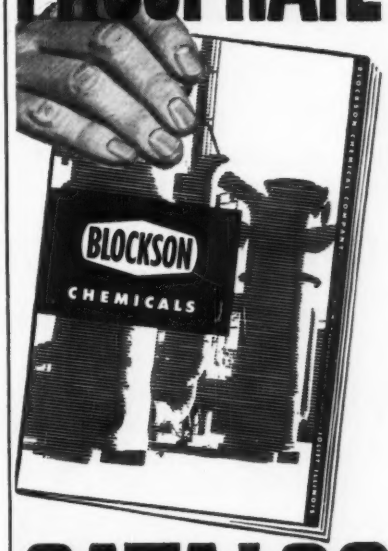
American Chemical Society, National meeting, New York, N.Y., Sept. 11-16.

Society of Plastics Engineers, conference, theme: plastics in business machinery; Binghamton, N.Y., Sept. 22.

BLOCKSON



PHOSPHATE

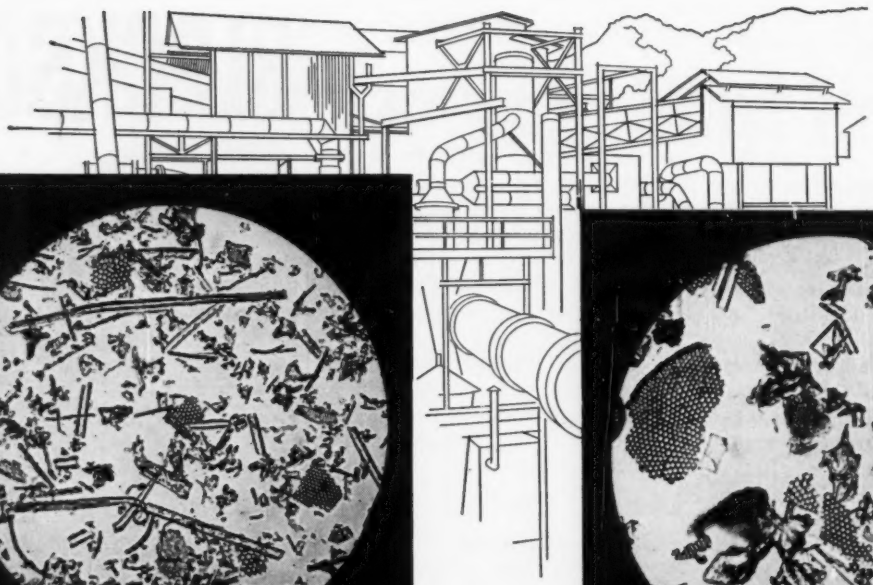


CATALOG

Send for this concise, basic reference data on Sodium Phosphates and other Blockson chemicals. Handy pocket size. Many time-saving tables and charts. Clip this ad to your business letterhead and mail to Blockson Chemical Company, Joliet, Ill.

BLOCKSON CHEMICAL COMPANY
Chemicals Division
Olin Mathieson Chemical Corporation

BLOCKSON



Milling and calcining equipment used for all Celite grades.

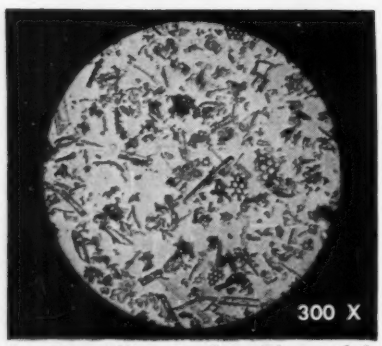
For high-clarity filtration of most liquids—use this specially milled diatomite, Hyflo Super Cel.



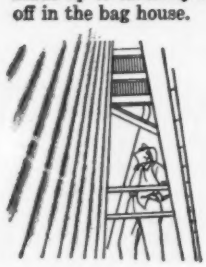
For filtration of larger suspended particles—Celite 545 combines maximum clarity plus faster flow rates.

In diatomites, Johns-Manville precision processing works for you

Constant uniformity in every grade of Celite assures consistent results, less down-time



For mineral filler use—Super Floss grade is made up of carefully sized fines air-floated off in the bag house.



Typical J-M bag house equipment.

As the microscope shows, each grade of Celite* diatomite has its own distinctive particle size distribution. Yet no matter where or when purchased, each remains uniform from bag to bag—your assurance of top production results with minimum down-time.

Three examples of flux-calcined Celites are shown here. Hyflo® Super Cel is widely used for filtration in many industries. It has just the right combination of coarse and fine particles to assure optimum clarity and flow rates. Celite 545, with a higher percentage of coarse particles, is used to achieve maximum clarity and faster flow rates with liquids that have larger suspended particles.

Super Floss, one of several bag house grades, has fine particle size distribution. A white powder, it is processed within very narrow tolerances (less than 1% retained on 325 mesh). It is a popular filler in fine products such as silver polishes.

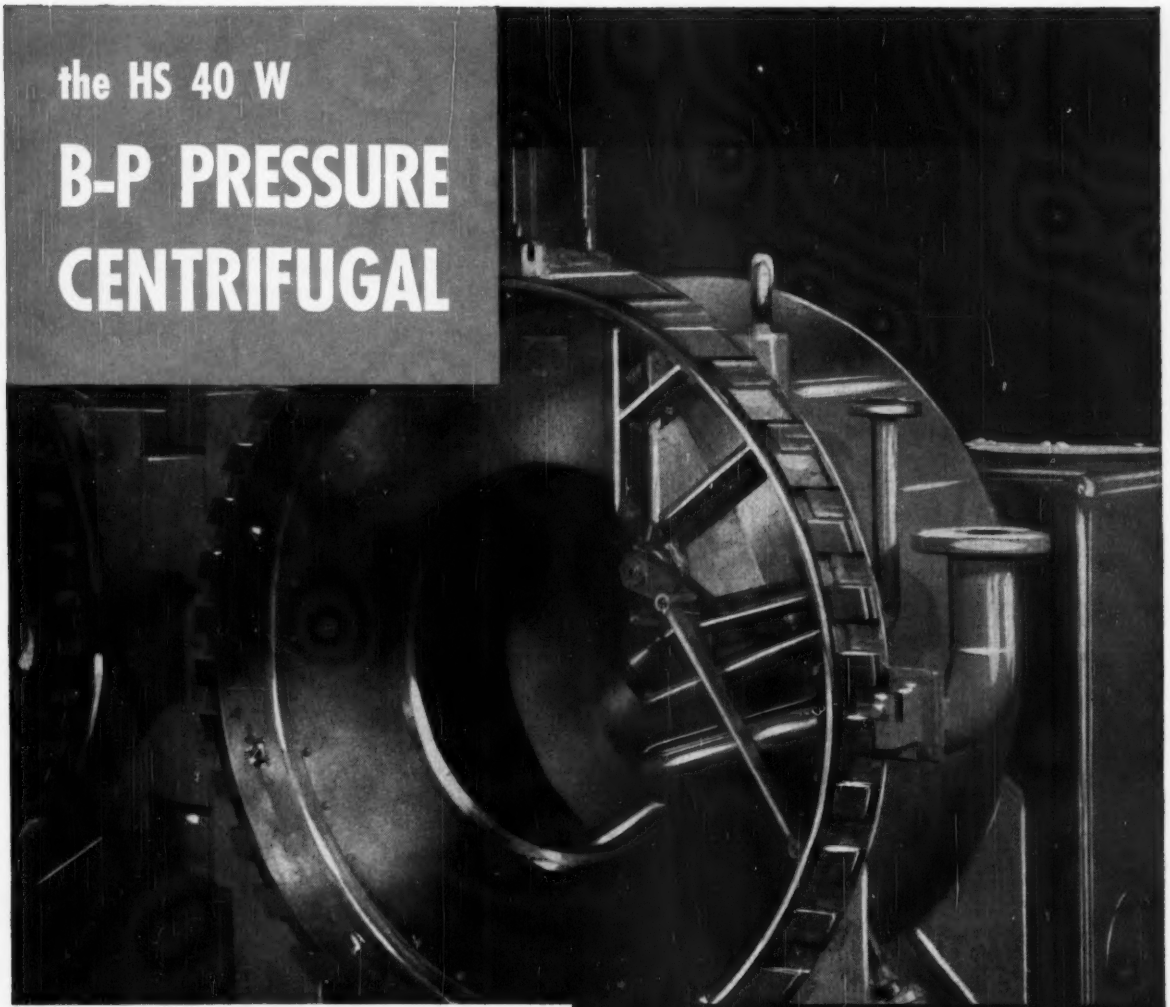
Johns-Manville can precision-produce so many different grades of Celite because it mines the material from the world's largest and purest commercially available deposit. For assistance with specific filtration or mineral filler problems, talk to a nearby Celite engineer. Or write direct to Johns-Manville, Box 14, New York 16, N. Y. In Canada, Port Credit, Ontario.

*Celite is Johns-Manville's registered trade mark for its diatomaceous silica products.

JOHNS-MANVILLE

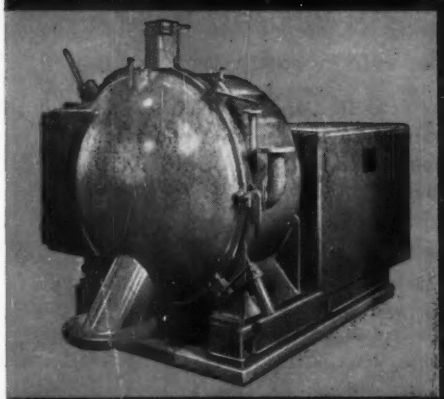
the HS 40 W

B-P PRESSURE CENTRIFUGAL



BAKER PERKINS research now brings you the HS 40 W Universal Pressure Centrifugal, engineered for normal operation at 1000 times gravity and internal pressures to 150 psi. Several important features are entirely new: A MECHANICAL SELF-BALANCING SHAFT SEAL is positioned where the main shaft enters the housing and is the only major moving seal. A CLAMPING AND SELF-ALIGNING DOOR SEAL consisting of a floating ring plus two O-rings assures a completely safe lock without the necessity of tightening bolts. A SIMPLIFIED DESIGN OF THE DISCHARGE KNIFE AND CHUTE. Complete discharge of all solids is effected, eliminating swirling or dusting of solids within the housing. PROGRESSIVE PEELING. For the first time, provision is made for the peeler knife to enter the cake at successively increasing depths. Glazing of the heel is eliminated. Air displacement is controlled during both the charging and peeling operations.

As in all Baker Perkins Universal Centrifugals, the interior of the new model is completely and readily accessible. For complete specifications of the high capacity HS 40 W Universal Pressure Centrifugal, see your B-P sales representative or write to:



BAKER PERKINS INC.

CHEMICAL MACHINERY DIVISION
SAGINAW, MICHIGAN

394



HARSHAW

PRODUCTION CONTROLLED HIGH-QUALITY

FLUORIDES

BORON TRIFLUORIDE
HYDROFLUORIC ACID
ANHYDROUS . . . AQUEOUS

Shipments of Fluorides roll out of our Cleveland plant daily, either in tank cars, tube trailers, or in cylinders. Each shipment incorporates the knowledge gained during more than 45 years as a major producer of Hydrofluoric Acid.

We offer you the benefit of our accumulated experiences in engineering problems involving corrosion, safe handling and storage facilities.

Write for your free copy of M.C.A. Chemical Safety Data Sheet SD-25 on properties and essential information about . . . HYDROFLUORIC ACID Anhydrous and Aqueous.



Harshaw Also Supplies:

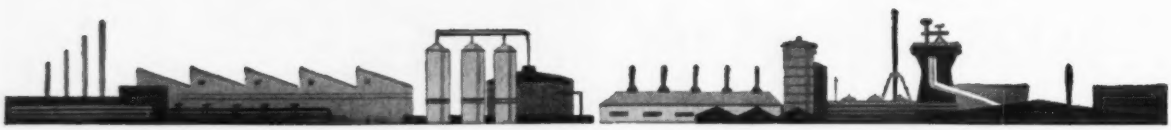
Ammonium Bifluoride
Ammonium Fluoborate
Barium Fluoride
Bismuth Fluoride
Boron Trifluoride Complexes
Chromium Fluoride
Copper Fluoborate
Fluoboric Acid
Fluorinating Agents
Frosting Mixtures
Hydrofluoric Acid Anhydrous
Hydrofluoric Acid Aqueous
Hydrofluosilicic Acid
Laboratory Fluorine Cells
Lead Fluoborate
Lithium Fluoride
Metallic Fluoborates
Potassium Bifluoride
Potassium Chromium Fluoride
Potassium Fluoborate
Potassium Fluoride
Potassium Titanium Fluoride
Silico Fluorides
Silicon Tetrafluoride
Sodium Fluoborate
Tin Fluoborate
Zinc Fluoborate
Zinc Fluoride

HARSHAW

THE HARSHAW CHEMICAL CO.

1945 East 97th Street • Cleveland 6, Ohio

Chicago • Cincinnati • Cleveland • Detroit • Houston
Hastings-On-Hudson • Los Angeles • Philadelphia • Pittsburgh



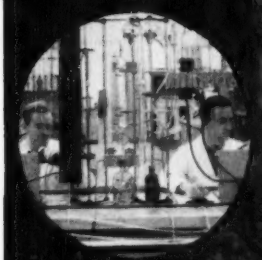


Chemico's modern research and development center is staffed and equipped to provide industry with a full range of bench scale and pilot scale development services, including:

- ★ Process development and evaluation
- ★ New process research
- ★ Process improvement
- ★ Efficiency improvement of unit operations
- ★ Development of new equipment and products

If an idea is economically sound and technically feasible, Chemico can put it into commercial operation in the shortest possible time. Each research contract is supervised by engineers and technicians familiar with industrial processes, equipment, and designs. Therefore, the transition to profitable commercial application is smooth and efficient. The client can be assured that Chemico will undertake such activities in the framework of a completely confidential relationship.

If you are interested in learning more about Chemico's research activities, please address your inquiries: Attn: TECHNICAL DIRECTOR, at the address below.



RESEARCH

from an engineering point of view

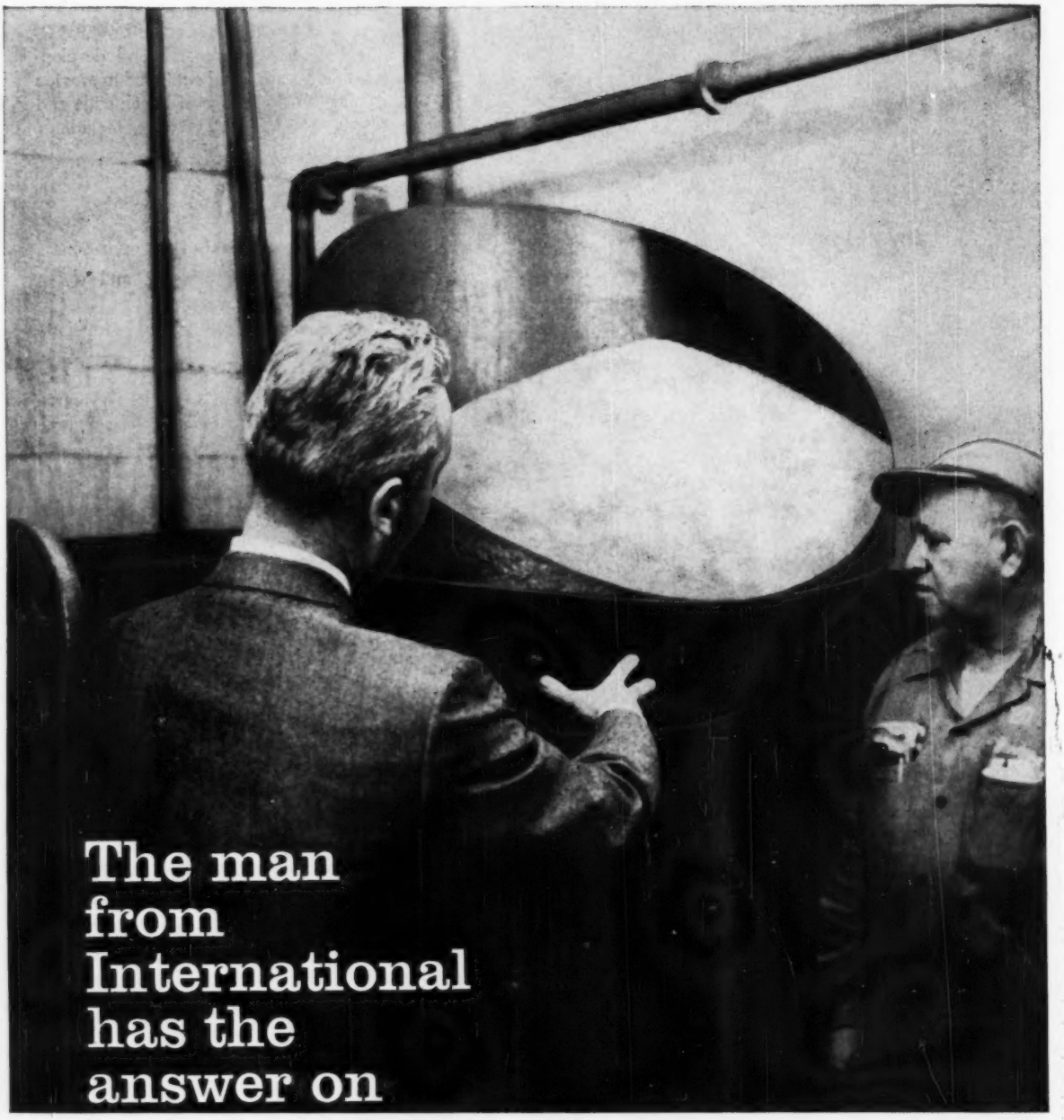




CHEMICO

CHEMICAL CONSTRUCTION CORPORATION
525 West 43rd Street, New York 36, New York

CHICAGO • DALLAS • HOUSTON • PORTLAND, ORE. • TORONTO • LONDON • PARIS • JOHANNESBURG • TOKYO



The man from International has the answer on brine distribution

Brine is used to process several products in this modern food plant. Until recently, it was made separately at each point of use—a costly, time-consuming procedure. The man from International Salt Company was able to recommend a much more efficient method, utilizing a Sterling Lixate rock salt dissolver. In one automatic operation, the Lixator* produces fully saturated, self-filtered, crystal-clear brine. By installing a suitable Lixator at one central point, brine is *piped directly* from this single source to all points of use. Because no labor is involved in brine distribution, the savings are remarkable. Contact your man from International or our nearest district office: Boston, Buffalo, Charlotte, Chicago, Cincinnati, Detroit, Newark, New Orleans, New York, Philadelphia, Pittsburgh, St. Louis. Or write direct to International Salt Company, Clarks Summit, Pa.

*Registered T. M. of International Salt Company

INTERNATIONAL STERLING SALT **SALT COMPANY**

"A STEP AHEAD IN SALT TECHNOLOGY"



2-NP 33% by wt.
BuOH 33% by wt.
Xylol 34% by wt.
Curing Agent: 6% TEPA

with

2-NP!



MIBK 33% by wt.
Cellosolve 33% by wt.
Xylol 33% by wt.
Curing Agent: 6% DETA

without

2-NP!

here's proof that you can put greater chemical resistance in your epoxy films

The photograph above dramatically shows the comparative chemical resistance to nitric acid of a pigmented epoxy film cast from 2-NP as compared with one cast from MIBK. Both slugs were exposed to the acid for 48 hours. And what a difference!

In other words, 2-Nitropropane is excellent for epoxy resins, *your* epoxy resins. Solvent mixtures based on 2-NP eliminate many of the weaknesses inherent in solvent systems heretofore used in epoxy resin spray finishes.

You get: greater chemical resistance, improved drying time, favorable evaporation rate, marked reduction in pinholing, and less water-vapor permeability.

For *all* the advantages of formulating epoxy resin finishes with 2-NP, write for technical literature that gives you the full story of performance. Mail this coupon—get better epoxy resins!

INDUSTRIAL CHEMICALS DEPARTMENT

COMMERCIAL SOLVENTS CORPORATION

260 MADISON AVENUE, NEW YORK 16, N. Y.

Please send me all your technical literature on the application of your 2-NP to my epoxy films.

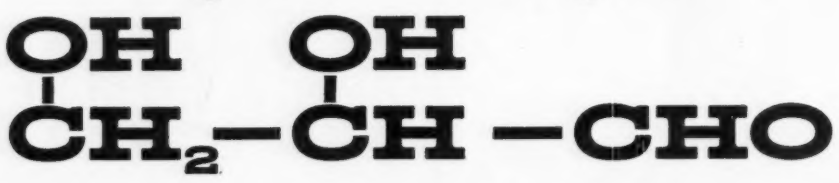
Name_____ Title_____

Company_____ Street_____

City_____ Zone_____ State_____

Announcing
Fourth "G" from Acrolein

Glyceraldehyde



Glyceraldehyde is the newest member of the Shell family of "G" derivatives from acrolein which includes glycerol, glutaraldehyde, and glycidaldehyde. Glyceraldehyde, the simplest sugar with one asymmetric carbon atom, provides the functionality and reactivity of hydroxyl and carbonyl groups in one simple molecule.

In most of its reactions, glyceraldehyde exhibits expected diol or aldehyde behavior. It forms the expected carbonyl derivatives with hydroxylamine and hydrazines; with alcohols and mercaptans it forms acetals and thioacetals; alkalis catalyze its condensation to hexose sugars.

Glyceraldehyde reacts through its hydroxyls with acyl chlorides and anhydrides to give esters; it forms dioxolanes with aldehydes and ketones.

Glyceraldehyde crystallizes from aqueous solution as a dimer—a cyclic hemiacetal which reverts to monomer in aqueous solution. In some instances, its reactions lead to products retaining the basic dimer structure thus providing a source of interesting 1,4-dioxane derivatives.

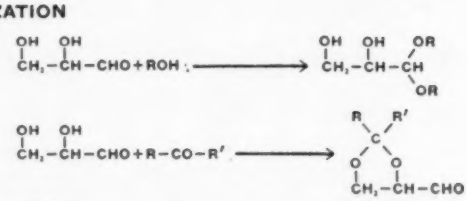
USES:

Glyceraldehyde, in addition to its use as an intermediate, is suggested for the preparation of polyesters with good adhesive properties; for condensation with phenols, ureas, and sulfonated aromatic compounds for use as adhesives and rubber tackifiers; and for modification of conventional polymer types. It has been employed as a gelatin hardener in photographic applications and also may be useful as a cellulose modifier or cross-linking agent in the treatment of textiles and paper. The ready combination of glyceraldehyde with proteins indicates a possible use for leather tanning and related applications.

DIMERIZATION



ACETALIZATION



ESTERIFICATION



AVAILABILITY:

Research quantities of glyceraldehyde (40% aqueous solution) are available. Your letterhead request will bring you technical information and samples you require. Please send your inquiries for literature and samples to: Shell Development Company, 4560 Horton Street, Emeryville, California.

SHELL CHEMICAL COMPANY
INDUSTRIAL CHEMICALS DIVISION

Atlanta • Chicago • Cleveland • Detroit • Houston • Los Angeles • Newark • New York • San Francisco
IN CANADA: Chemical Division, Shell Oil Company of Canada, Limited. Montreal • Toronto • Vancouver

Business
Newsletter

CHEMICAL WEEK
July 16, 1960

AviSun's big new polypropylene resin plant will be built at New Castle, Del. A year ago the company began turning out quantities of the polymer at Port Reading, N.J. (*CW Business Newsletter, March 5*), becoming the second commercial U.S. polypropylene producer. Now it will push ahead with plans for a new, 100-million-lbs./year plant to be engineered by Bechtel Corp. (San Francisco) adjacent to its 10-million-lbs./year polypropylene fiber and film plants. The company, a joint venture of Sun Oil and American Viscose, obtains its raw material from Sun's Marcus Hook refinery, 20 miles upriver. The company's own plants will be major polymer users. First of its polypropylene fibers, Olane, is expected on the market soon.

Meanwhile, Novamont—Montecatini's U.S. subsidiary—is still confident that its 22-25-million-lbs./year polypropylene plant will be onstream next Jan. 1. Company spokesmen say that construction is "well under way" at Neal, W. Va.

•

Construction of a new plant for silicone intermediates will be started by General Electric next month. The new, $3-million "advanced design" facility will replace the company's existing plant in Waterford, N.Y., is expected to go into operation by late '61. The new plant construction is part of a 24-month, multimillion-dollar program that includes a $1-million silicone fluids finishing building, expected to go into operation next November.

•

A major polyglycol expansion is under way at Dow's Freeport, Tex., plant. The new unit is tabbed for startup early in '61, will supply polyglycols for the growing polyurethane market, while the plant currently in operation will be primarily devoted to development of new polyurethane products. Costs have not yet been disclosed.

•

It's the end of the line for U.S.-owned operations in Cuba, barring some unforeseen and amazing turn of events. While there was violent Cuban reaction to the U. S. cut in Cuba's sugar import quota—Castro promptly jammed through a law paving the way for expropriation of property owned by U. S. interests—actual property seizure may take some time and will probably be a piecemeal affair because of the problem Cuba faces in manning the enterprises.

What will happen to the investment climate elsewhere in Latin America is the big question now facing U. S. investors. By taking reprisals against Cuba, Washington has intensified a political problem of the leaders of countries such as Mexico, Brazil and Venezuela.

Anti-U.S. pressure by opposition politicians and leftist union leaders could influence their petrochemical investment policies. And if, as

seems likely, Cuba becomes the base for intensified Communist operations in Latin America, violence will be hastened in trouble spots like Panama, Nicaragua and Paraguay, further unsettling the Latin-American picture.

•

Severe political and labor trouble gives a hollow ring to India's new five-year plan, which was disclosed last week (*see p. 34*). Early this week Prime Minister Nehru was facing the biggest domestic crisis of his government's 14-year-old life, with 2-million government employees threatening to paralyze the country with a general strike, starting at midnight, July 11. Government spokesmen say the strike is politically motivated, point to Socialist and Communist control of the major government employee unions.

•

And along with the increased tension in international affairs, there's rising concern this week about the business situation. Although sales of chemicals and allied products climbed again in May, bringing this year's five-month total to nearly $11.8 billion (up 13.6% over the corresponding period in '59), there have been some disquieting dips in production. For example, in April there were output drops (relative to the preceding month) of 10% or more in acetic acid, acetic anhydride, ethyl acetate, ethylene glycol, methanol, phthalic anhydride, cellulosic plastics, phenolic resins and vinyl resins.

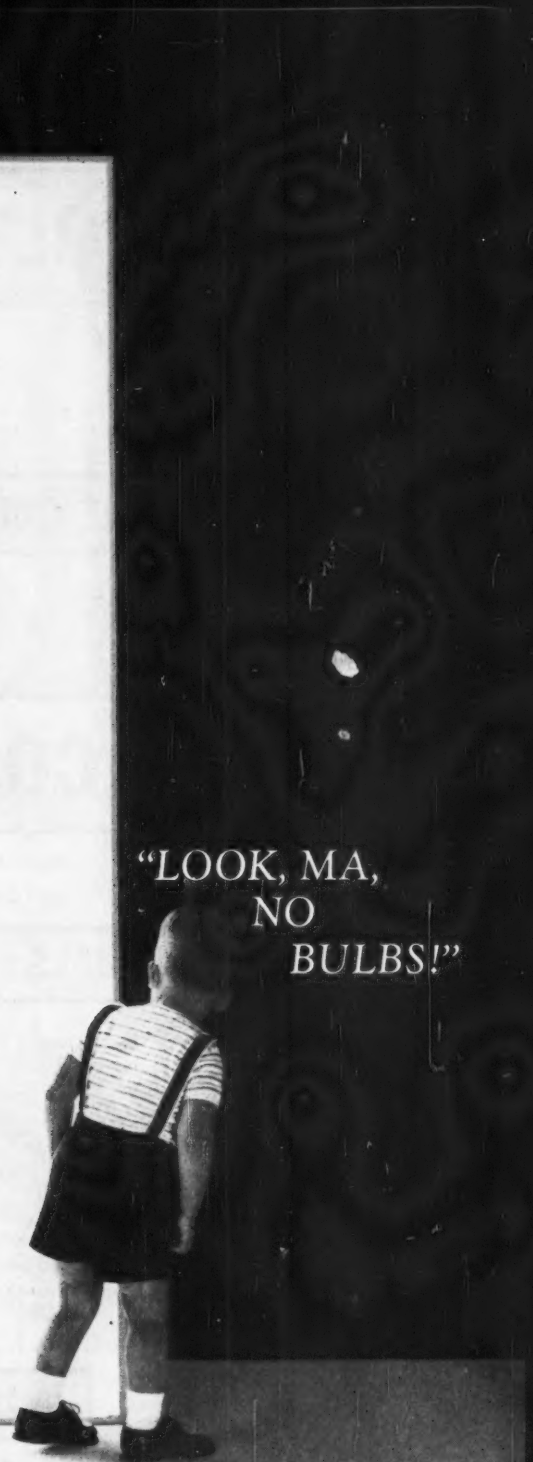
Hooker Chemical—whose fiscal year makes it the first large chemical company to make a midyear report—says its sales for the six months ended May 31 were up less than 1%, to not quite $75 million; and net income was down 8%, to $6.4 million.

•

Look at the big buildup in high-purity manganese metal: This week American Potash & Chemical is launching a $5-million project to produce up to 10 million lbs./year of electrolytic manganese at Aberdeen, Miss., adjacent to its sodium chlorate plant. Foote Mineral is adding a 20-million-lbs./year plant at its Johnsonville, Tenn., site (*CW, July 9, p. 27*). And Union Carbide Metals Co. is upping by 20%, to at least 15 million lbs./year, the capacity of its manganese facilities at Marietta, O. Behind these expansions: mounting use of the metal in stainless steels and chrome-nickel alloys, and expectations of a growing market abroad.

•

Will antitrust be an election issue during the coming political campaign? One chemical process company that doesn't shrink from a showdown on this issue in Procter & Gamble, which has decided to appeal this week's opinion by a Federal Trade Commission examiner that the company should spin off Clorox Chemical Co., the household bleach producer acquired in '57. P&G president Howard Morgens says competition has increased in the industry, new producers are entering the field, and Clorox's share of the market is no larger than it was in '57.



Electroluminescent lighting requires no bulbs, tubes, filaments, cathodes! In the future, you may see whole walls and ceilings illuminated completely with unvarying evenness, by "these panels of light." ¶The secret of General Electric's electroluminescent lamp is in the "sandwich"...millions of tiny phosphors in a base made from Cyanamid Acrylonitrile are coated between layers of flexible metal and glass. Result: a new, better "American Way of Light." ¶This is just one among hundreds of applications for Cyanamid Acrylonitrile. Cyanamid has more than 20 years' experience with this useful reactive chemical and wants to share its full knowledge to help you develop a better product . . . and do a better job! When you need us, write us.

AMERICAN CYANAMID COMPANY • PETROCHEMICALS DEPARTMENT • 30 ROCKEFELLER PLAZA, NEW YORK 20, N.Y.

CYANAMID

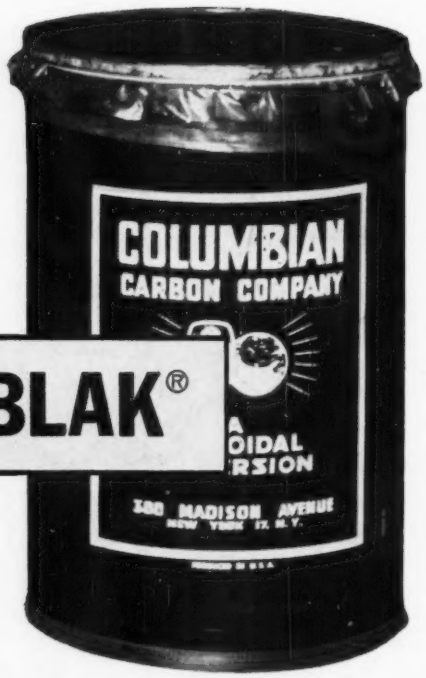
POLYSTYRENE

OR

POLYSTYRENE SCRAP

PLUS

COSTYRENEBLAK®



EQUALS



AND

...Columbian Costyreneblak offers many advantages. It's **CLEAN** . . . carbon black predispersed in chips that are relatively dustless. Clean-up time and chance of contamination are at a minimum. You get **FASTER COMPOUNDING** too . . . no pre-milling necessary . . . better dispersion, less rejects. Finally, Costyreneblak means **ECONOMY** . . . usually 25% less carbon black is required with this dispersion than when you use loose carbon black. Get all the facts . . . today.

COLUMBIAN CARBON COMPANY

380 Madison Avenue **New York, N. Y.**



Ready Now

for Researchers
Product Developers
Intermediates Users
Purchasing Personnel

New Catalog of

NATIONAL® ORGANIC CHEMICALS

From Adipic Acid to Xylidine Isomers, it gives you the basic facts on 130 National Organic Chemicals . . . condensed specifications, basis of sale, packaging and handling data and a valuable glossary of synonymous (Chem Abstracts and Commercial) names.

And, as a companion piece, we'll send our latest Price List so you can check the economics of your products, processes and purchases.

Use this convenient coupon for your copy of these useful books. We'll send them *promptly* without cost or obligation.

☐ Catalog ☐ Price List

NAME_____

COMPANY_____

ADDRESS_____

Allied Chemical

NATIONAL ANILINE DIVISION
40 Rector Street, New York 6, N. Y.

Atlanta Boston Charlotte Chicago Greensboro Los Angeles
Philadelphia Portland, Ore. Providence San Francisco
In Canada: ALLIED CHEMICAL CANADA, LTD., 100 North Queen St., Toronto 18
Distributors throughout the world. For information:
ALLIED CHEMICAL INTERNATIONAL • 40 Rector St., New York 6, N. Y.

B&W
WELDING FITTINGS



MADE BY MEN WHO KNOW TUBING

B&W Welding Fittings manufacturing is integrated with the Division's own tube-making and steel-making facilities. Consider the relation between tube-making and the manufacture of welding fittings . . . in addition to knowing welding fittings manufacturing, B&W knows of the making of tubing from which fittings are produced. This knowledge plus integration of facilities permits B&W to provide superior fittings, completely quality-controlled, matched to end-use service. It also means on-time deliveries of fittings made from tubing of the specialized steels because B&W can closely control manufacturing schedules from melt to the shipment of the finished product.

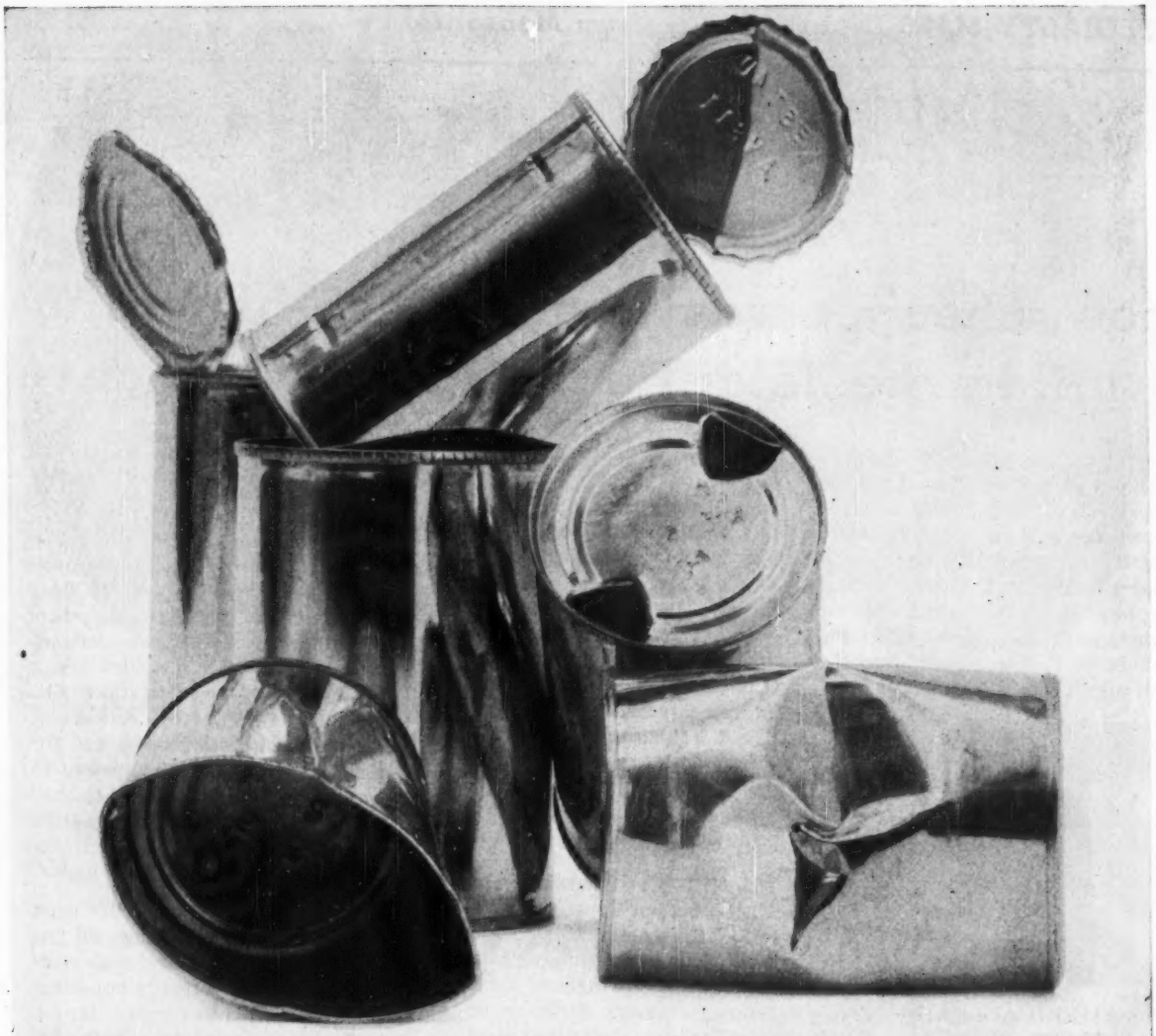
B&W Welding Fittings and Flanges are available through qualified distributors in carbon steel and the B&W CROLOYS in a complete range of types and sizes. Write for B&W Bulletin FB502. The Babcock & Wilcox Company, Tubular Products Division, Welding Fittings Plant, P. O. Box 230, Beaver Falls, Pennsylvania.

B&W THE BABCOCK & WILCOX COMPANY

TUBULAR PRODUCTS DIVISION

TA-9079-WF2

Seamless and welded tubular products, solid extrusions, seamless welding fittings and forged steel flanges—in carbon, alloy and stainless steels and special metals



THE TIN CANS THAT TURNED INTO GOLD

(Another Diamond Alkali Success Story about Caustic Soda)

A Scrap Dealer was having trouble deciding whether or not to go into the steel detinning business. He wasn't even sure a practical reclaiming method had been perfected.

He called the Diamond technical man and gave him the problem. The problem was referred to the Diamond laboratories.

Not only was this man given a formula for detinning with caustic soda, but also a detailed flow chart of the process and tips on how best to market the reclaimed tin.

If *you* use caustic soda, get to know the Diamond technical man. He saves customers money on shipping and handling problems, helps with their process problems. What he can't handle himself, he'll refer to the Diamond Research Center.

There is no finer caustic soda than Diamond's. There is no better service than Diamond's. No matter where your plant is located, you can get fast, economical delivery from one of Diamond's four strategically located producing plants. By truckloads, carloads or bargeloads.

Call any Diamond Sales Office: Chicago, Cincinnati, Cleveland, Houston, Memphis, New York, Philadelphia, Pittsburgh, St. Louis. DIAMOND ALKALI COMPANY, 300 Union Commerce Building, Cleveland 14, Ohio.

Diamond Chemicals®

(Advertisement)
SPECIALTY MARKET BUILDERS *(from Monsanto)*

PTSA

(*para*–toluenesulfonamide)

new, cheaper way to make non-blotching mildew-resistant paints and coatings

One of the paint maker's (and professional painter's) nightmares is the appearance of dark brown or black blotches on a relatively new paint job. Almost as bad is the onset of a generally dingy look. Often when this happens the irate homeowner or maintenance man blames either the painter or "cheap paint." But, the real culprit is usually: mildew!



The AMERICAN PAINT AND WALLPAPER DEALER (Vol. 46, 1954) reported from a survey covering hundreds of house exteriors that mildew is the major cause of painted-surface disfiguration; 68% of the homes observed were marred by stains and blotches that had nothing to do with dirt or paint failure!

Paint makers recognize the problem, but most have been discouraged by the cost of making their paints immune to mildew attack. Until recently, the cost of a fungistatic additive ran about 50¢ per gallon of paint. Now a new fungistat, paratoluenesulfonamide, promises to cut this cost by at least one half!

Structurally, PTSA is distantly related to sulfanilamide, but as a volume-produced intermediate it is quite low in cost. Nonetheless, PTSA is a "wonder drug" in its own right as far as making paint and varnish films immune to mold stain and to decay by microorganism attack.

Paint makers first got wind of this low-cost way to make fungus-resistant paints from a report: "Tropical Performance of Fungicidal Coatings," Part I, by J. M. Leonard and A. L. Pitman, of the Naval Research Laboratories. According to the NRL report, PTSA gave excellent mildew protection to the varnishes used for electronic equipment in jungle service. Subsequent studies showed that PTSA was equally effective in a variety of protective coatings. Among these, tested in the steamy jungles of Panama, were white house paint, barn paint, lacquers and tung-oil varnishes!

The NRL work started years ago when it became apparent that fungitoxic varnishes were badly needed for coating electronic equipment used in the moist, humid areas of the South Pacific. Primary function of the varnish was to impede moisture adsorption and to create a nonwetting surface of high electrical resistance. Out of 100 promising chemical compounds, the six best fungistats chosen for extensive evaluation were: PTSA, salicylanilide, phenylmercuric phthalate, pentachlorophenol, uranyl nitrate, and copper 8-quinolinolate. PTSA proved to be the best, either alone or in binary mixture.

In the initial testing, the vehicle was a phenolic resin and tung-oil varnish containing about 12.5 gallons of oil per 100 pounds of resin, closely resembling the coating prescribed by Specification MIL-C-173. The PTSA was simply added by grinding in on the ball mill. Samples of this varnish with various concentrations of PTSA were applied to cotton braid and exposed at tropical Coco Solo Panama Canal Zone temperatures. As little as 2% PTSA (on the nonvolatile) controlled mold attack even after 33 months of exposure. By this time the unprotected controls had virtually rotted away.

Subsequent test results with barn paints, white house (mill white) paints, iron oxide-linseed oil types, gloss alkyd enamels, lacquers and others confirmed that PTSA gave outstanding protection against mildew attack on all coatings subject to attack. The amount of PTSA needed varied with the particular formulation, and for each formulation there appeared to be a critical minimum level. For clear varnishes the required amount of PTSA was in the range of 2-4%; for paints, in the range of 6-8% or higher.

PTSA has several "pluses" for paint makers: it is an easily handled fine white crystal, compatible with coating vehicles and virtually non-toxic. It has no effect on pigmentation. Water-base paint makers, eyeing the possibilities of water-base exterior alkyds, are particularly interested. The reason is simple; some water-base paints are susceptible to mold and mildew attack before use. Some mold in the can! *Industrial and Engineering Chemistry* magazine (April 1959) estimates a half-million dollars was spent in 1958 for preservation of water-base paints alone. PTSA offers protection both in-the-can and after application. To the water-base paint maker, PTSA promises he can kill the two birds with one stone.

For futher information on paratoluenesulfonamide use in mildew-resistant paints and coatings, request a copy of Specialty Data Report CS-12. Write to: Monsanto Chemical Company, Organic Chemicals Division, Dept. 2770-Y, St. Louis 66, Mo.

POWELL CORROSION RESISTANT VALVES

performance that makes a world of difference

The Powell Special Design and Alloy Valve Division was created to study and solve the flow control problems arising from the increasing number of corrosive fluids used in the Chemical and Process industries.

As a result, Powell has developed valves that can be depended upon for long, uninterrupted service under the most corrosive conditions; valves that require little maintenance; and that eliminate the possibility of contamination of end product.

Powell offers valves to handle practically every corrosive fluid—valves of every design and in the largest selection of metals and alloys. Contact your local Powell distributor. Or write or call us direct. Our consulting engineers are at your service.

Powell . . . world's largest family of valves

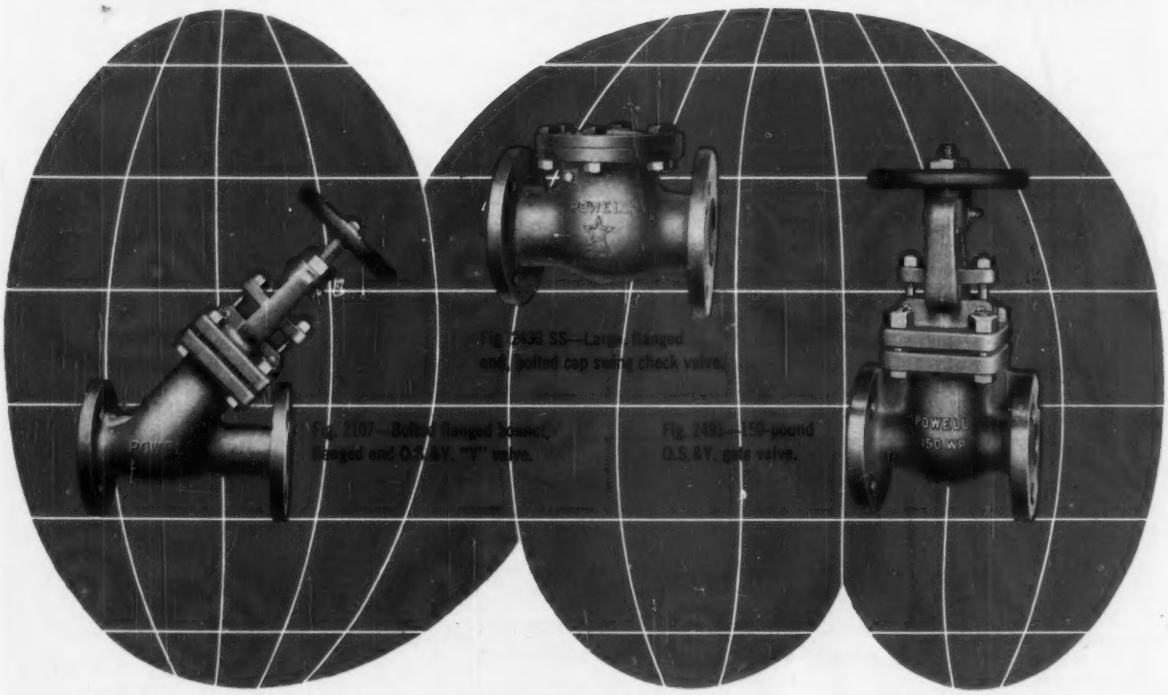


Fig. 2107—Bolted flanged bonnet, flanged end O.S.&Y. "Y" valve.

Fig. 2638 SS—Large flanged end bolted cap swing check valve.

Fig. 2491—150-pound O.S.&Y. gate valve.

THE WM. POWELL COMPANY • DEPENDABLE VALVES SINCE 1846 • CINCINNATI 22, OHIO

FOR INDUSTRIAL FINISH FORMULATION

SHELL AROMATIC SOLVENTS

with a variety of evaporation rates

SHELL TOLUENE

. . . for applications where very fast evaporation and high solvency are required.

SHELL XYLENE

. . . has an exceptionally narrow distillation range, is slower drying than toluene.

SHELL CYCLO-SOL* 53

. . . an excellent solvent with higher flash point and slower evaporation rate than xylene. Recommended for baking finishes and flow coating.

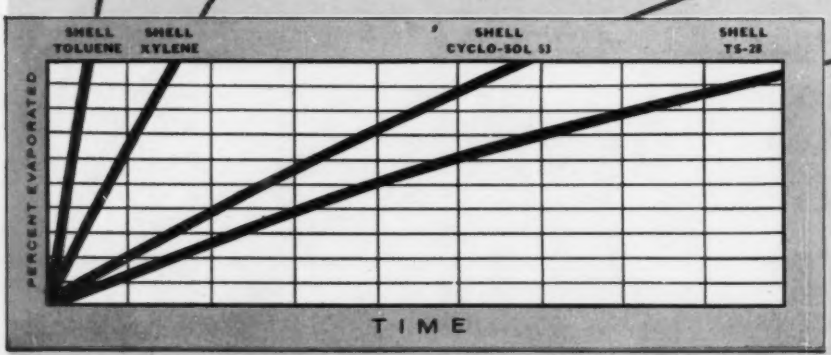
*Registered Trademark



Typical properties are given in the booklet shown. Write for a copy.

SHELL TS-28 SOLVENT

. . . a still slower drying aromatic concentrate of medium high solvency. Recommended for baking finishes and flow coating.



These Shell solvents cover a very wide range of evaporation rates. Their individual characteristics satisfy specific requirements in a great variety of formulations.

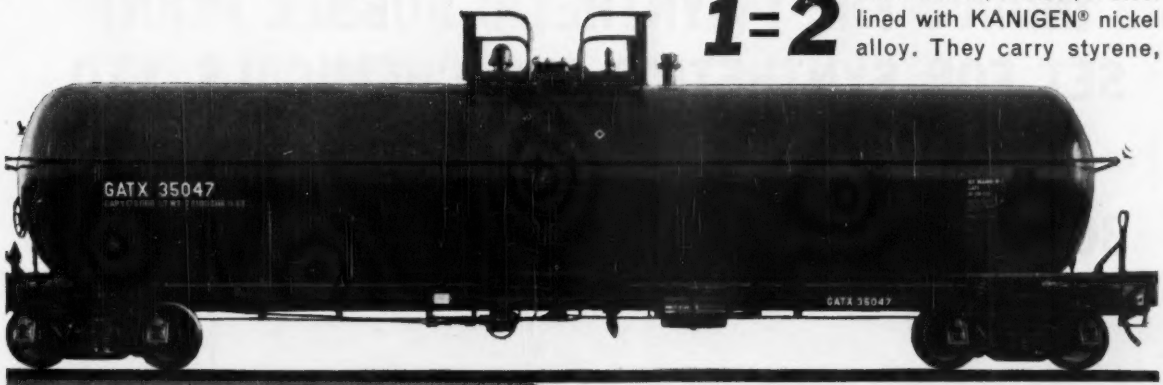
SHELL OIL COMPANY

50 WEST 50TH STREET, NEW YORK 20, NEW YORK
100 BUSH STREET, SAN FRANCISCO 6, CALIFORNIA

SHELL

HOW TO MAKE 1=2

with GATX 20,000-gallon tank cars. Tank cars are getting bigger and GATX builds more of them. Last year, for example, GATX added four hundred 20,000-gallon tank cars to its fleet. These 20,000-gallon General American tank cars are made of aluminum, or steel, or steel lined with KANIGEN® nickel alloy. They carry styrene, grain alcohol, acetic acid, cyclohexane, lube oil and many other petroleum products.





For shippers who can use extra-large capacity cars with the advantage of lighter weight-per-gallon-of-capacity, General American has or will build cars of any size that is practical.

General American builds, leases and sells a wide variety of special purpose cars of all sizes—or we can design and build cars to suit your needs. *It pays to plan with General American.*

GENERAL AMERICAN TRANSPORTATION CORPORATION

GATX GENERAL AMERICAN TRADE MARK

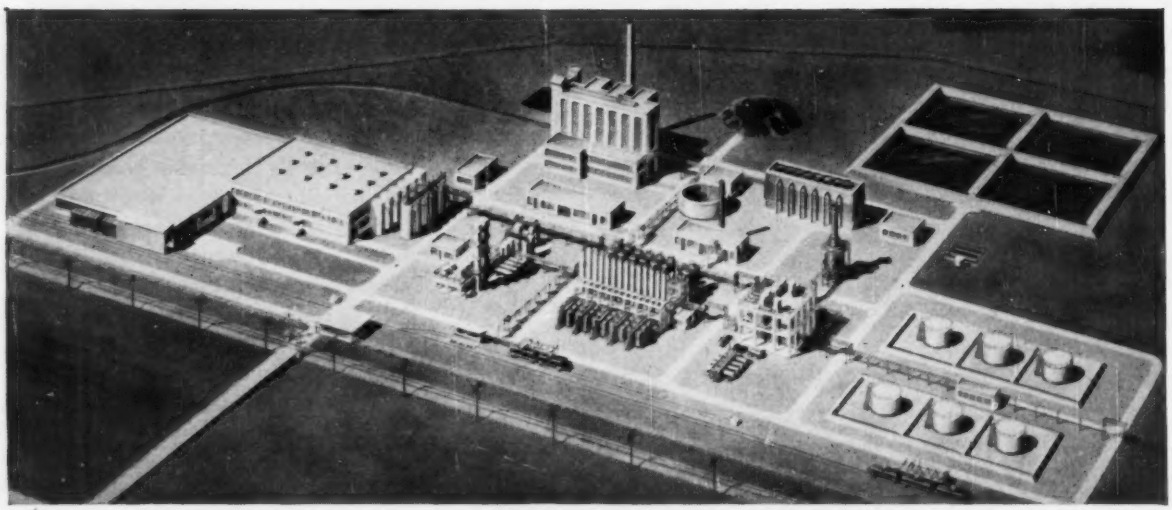
135 South LaSalle Street
Chicago 3, Illinois
Offices in principal cities

LUMMUS

ENGINEERS AND CONSTRUCTORS FOR INDUSTRY

INDIA'S FIRST SYNTHETIC RUBBER PLANT SET FOR SYNTHETICS AND CHEMICALS, LTD.

Lummus to Design, Engineer and Construct 30,000 Ton Per Year Plant Near Bareilly, India



The Lummus Company has been awarded the contract to design, engineer and construct a 30,000 ton per year synthetic rubber plant near Bareilly, Uttar Pradesh, India for Synthetics and Chemicals, Ltd. This firm was recently formed by The Firestone Tire & Rubber Company in association with the banking and industrial firm of Kilachand Devchand and Company Private, Ltd. of Bombay.

The 30 million dollar project will include plants for the production of butadiene and styrene, the principal raw materials, as well as a copolymer plant to manufacture the final product, synthetic rubber. In addition, Lummus will construct all the plant utilities and offsites. Although Lummus will design the plant for a capacity of 30,000 tons or more per year, the initial annual production will be 20,000 tons. Technical divisions of The Firestone Tire & Rubber Company are furnishing the basic engineering and know-how for the butadiene, styrene and copolymer units.

The plant site has been established in the heart of the sugar cane and alcohol producing area, and the alcohol obtained from the sugar cane will be the source of the butadiene, the principal ingredient of synthetic rubber.

Indian technicians and operating personnel will be trained to run the plant, whose final products will meet standard world-wide industry specifications.

Financing of the project will be assisted by a 27,100,000 Indian rupee (or $5,700,000) loan from the Export-Import Bank of Washington to Synthetics and Chemicals, Ltd. This constitutes the largest foreign currency loan in the bank's history. The remainder of the financing will come from private banks in the United States and the United Kingdom as well as from India.

The project is expected to save India approximately 10 million dollars in foreign exchange annually.

Lummus has over 50 years' experience in the design and construction of more than 850 plants for the process industries throughout the world. Call Lummus on your next project.

THE LUMMUS COMPANY, 385 Madison Avenue, New York 17, New York, Houston, Washington, D. C., Montreal, London, Paris, The Hague, Madrid; Engineering Development center: Newark, N. J.

Got a real drying problem?



Why not try an isophthalic alkyd to solve those "hard-to-lick" air-dry problems. Isophthalic alkyds are fast-drying—in tack-free time and have definitely superior through-drying properties. Besides better drying qualities, isophthalic alkyds are superior in toughness, adhesion and resistance to impact and abrasion.

New test data now available! Address your inquiry to any Oronite office.

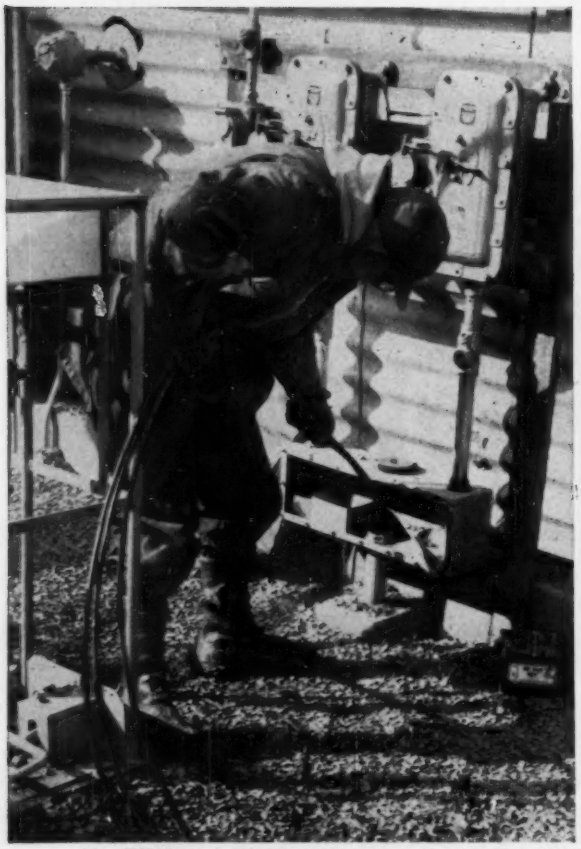
ORONITE CHEMICAL COMPANY
A CALIFORNIA CHEMICAL COMPANY SUBSIDIARY

EXECUTIVE OFFICES • 200 Bush Street, San Francisco 20, California
SALES OFFICES • New York, Boston, Wilmington, Chicago, Cincinnati, Cleveland, Houston, Tulsa, Los Angeles, San Francisco, Seattle
FOREIGN AFFILIATE • California Chemical International, Inc., San Francisco, Geneva, Panama

6407

Another new development using

B.F.Goodrich Chemical *raw materials*





New THW wire insulated with Geon is used in sizes up to 3/0 AWG at this new Sohio plant. Wire is made by the Paranite Wire and Cable Division of the Essex Wire Corporation, Marion, Indiana. B.F.Goodrich Chemical Company supplies the Geon vinyl.

"We welcome the higher factor of safety"

. . . of new THW wire insulated with GEON vinyl

These pictures show new wiring going into the Sohio Chemical plant at Lima, Ohio. Here's what the contractor, W. W. Clark Corporation of Cleveland has to say about it:

"In a chemical plant or refinery, electrical wiring often has to go near processing equipment that operates at high temperatures. We try to keep it at least a foot away, but sometimes have to go as close as 6". We welcome the higher factor of safety this new THW wire gives us."

Now you can add new heat resistance to the proved properties of insulation of Geon vinyl. Geon is tough, weatherproof and keeps its exceptional properties with age. It also resists oils, greases and chemicals.

For information about Geon wire and cable covering, or other ways that Geon improves products or opens new markets, write Dept. GH-5, B.F.Goodrich Chemical Company, 3135 Euclid Avenue, Cleveland 15, Ohio. Cable address: Goodchemco. In Canada: Kitchener, Ontario.

Geon VINYLS

B.F.Goodrich Chemical Company
a division of The B.F.Goodrich Company

B.F.Goodrich — GEON vinyls • HYCAR rubber and latex • GOOD-RITE chemicals and plasticizers

AN EXTRAORDINARY PUBLISHING ACHIEVEMENT OF OUR TIME!

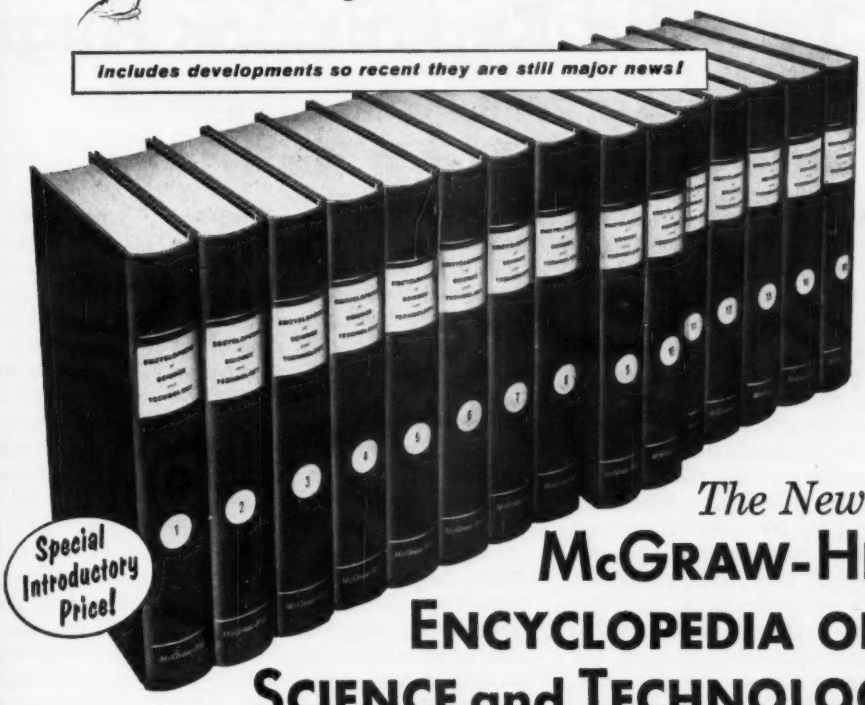
Here Are the Many Fields Covered:

ACOUSTICS
AERONAUTICAL AIRFRAMES
AGRICULTURE & SOILS
ANIMAL ANATOMY
PLANT ANATOMY
ANIMAL SYSTEMATICS
ASTRONOMY
ATOMIC, MOLECULAR AND NUCLEAR PHYSICS
BIOCHEMISTRY
BIOPHYSICS
CHEMICAL ENGINEERING
ANALYTICAL CHEMISTRY
INORGANIC CHEMISTRY
ORGANIC CHEMISTRY
PHYSICAL CHEMISTRY
CIVIL ENGINEERING
COMMUNICATIONS
CONSERVATION
CONTROL SYSTEMS
CYTOLOGY
ANIMAL ECOLOGY
PLANT ECOLOGY
ELECTRICAL ENGINEERING
ELECTRICITY
ELECTRONICS
FLIGHT SCIENCE
FOOD ENGINEERING
FORESTRY
GENETICS & EVOLUTION
GEOCHEMISTRY
PHYSICAL GEOGRAPHY
SURFICIAL AND HISTORICAL GEOLOGY
GEOPHYSICS
GRAPHIC ARTS
GROWTH AND MORPHOGENESIS
HEAT
INDUSTRIAL AND PRODUCTION ENGG.
LOW TEMPERATURE PHYSICS
MACHINE DESIGN
MATHEMATICS
MECHANICAL POWER
CLASSICAL MECHANICS
METALLURGICAL ENGINEERING
METEOROLOGY AND CLIMATOLOGY
MICROBIOLOGY
MEDICAL MICROBIOLOGY
MINERALOGY AND PETROLOGY
MINING ENGINEERING
NAVAL ARCHITECTURE AND MARINE ENGG.
NUCLEAR ENGINEERING
OCEANOGRAPHY
OPTICS
PALEONTOLOGY
ANIMAL PATHOLOGY
PLANT PATHOLOGY
PETROLEUM CHEMISTRY
PETROLEUM ENGINEERING
GENERAL PHYSIOLOGY
PLANT PHYSIOLOGY
SOLID STATE PHYSICS
THEORETICAL PHYSICS
PLANT TAXONOMY
PROPULSION
PHYSIOLOGICAL AND EXPERIMENTAL PSYCHOLOGY
INVERTEBRATE ZOOLOGY



The Entire Span of Today's Scientific, Engineering and Technical Knowledge Encompassed in a Monumental Reference Work Containing 8,500 pages of Text, 800 Index Pages, 7,200 Articles and 9,700 Illustrations.

Includes developments so recent they are still major news!



Special Introductory Price!

The New McGRAW-HILL ENCYCLOPEDIA OF SCIENCE and TECHNOLOGY

2,015 Contributors, including Nobel Prize Winners, Respected Leaders of Research and Industry . . . Over 6,000,000 Words — from Concise Articles to Amazingly Comprehensive Treatments . . . 100,000-Entry Index . . . a Wealth of Maps, Charts, Diagrams, Drawings, Photographs . . . many more than in any comparable work of reference.

AN epoch-marking publishing venture – providing up-to-date, authoritative information on all the sciences of our day – is being completed. The new McGRAW-HILL ENCYCLOPEDIA OF SCIENCE AND TECHNOLOGY will make readily accessible within its 15 volumes a vast fund of knowledge covering hundreds upon hundreds of subjects dealing with the whole spectrum of the physical sciences, life sciences, earth sciences, and engineering.

This major work fulfills a prime need of the scientist, the engineer, the technician – whether concerned with pure research or practical applications – whether his work is of a design or operating nature – whether he wants to review or keep abreast of the vastly enlarged knowledge of his own field or must bridge the gap between his specialty and unfamiliar areas into which his work leads him.

Unequalled in Timeliness, Clarity, Depth

This unique library makes it possible for you to have as near as your office, laboratory, plant, or home an all-knowing corps of specialists to which you can turn for precise, authoritative information. You can get answers to specific questions raised through daily professional activities or simply explore in a random way the universe of today's scientific, engineering, and technical knowledge — distilled into 7,224 comprehensive articles. Whatever your own field, whatever field your work is related to, you will find it here.

A Work of Unsurpassed Authority

The names of the contributors read like a "Who's Who" of the world's scientific community. All are recognized specialists – in many instances, articles were written by the very person credited with new discoveries and developments in a given field. Among them are Nobel Prize Winners and others who have distinguished themselves for their original and significant work.

Nothing comparable in breadth of conception, in authority, in usefulness, has ever before been offered in a reference work of this kind. As an all-embracing general reference or a practical working tool, this Encyclopedia belongs in the home and professional library of everyone with an interest in science and engineering. *An annual Supplement Volume keeps it always up to date.*

By reserving your first edition set now, you will enjoy the benefit of a special money-saving introductory price. Mail the coupon for full details.

MAIL THIS COUPON

McGraw-Hill Book Company, Dept. CW-7-16
327 West 41 Street,
New York 36, New York

Please send me without obligation your pre-view brochure on the new McGRAW-HILL ENCYCLOPEDIA OF SCIENCE AND TECHNOLOGY in 15 volumes; also details of your introductory price offer and terms of payment. (No salesman will call.)

Name.....

Address.....

City & Zone.....

State.....

CW-7-16

Chemical Week

Two Big Expansions Augur New

1. Stauffer-ASR venture will be sixth 'stereo' entry—and still room for growth.

Last week's move by Stauffer Chemical and American Synthetic Rubber—setting up a 50-50 joint subsidiary to produce polybutadiene and polyisoprene at Louisville, Ky.—means that by the end of '61, at least six U.S. companies will be in commercial production of these "stereo-specific" synthetic rubbers.

But the companies that are already in the throes of plant construction—and also at least four other companies that are still deliberating whether to produce these new elastomers—say they can't foresee any problem of overcapacity for these products. Furthermore, they express confidence that polybutadiene and polyisoprene will not cut into anticipated growth of older types of synthetic rubber (*chart, below*).

Instead, say the producers and prospective producers, these new products will (1) share in the steady growth of total rubber demand; (2) go into new applications all their own; and (3) take another bite out of the already declining U.S. market for natural rubber.

Polybutadiene First: The new Stauffer-ASR joint venture—to be known as American Rubber and Chemical Co.—will be headed by Stauffer President Hans Stauffer and ASR President Grant Thomas. Plans call for immediate start on construction of a plant—cost of which is estimated by industry sources at $10-15 million—with initial capacity of 30,000 long tons/year. Completion has been scheduled for Sept. '61; and first-year sales are projected at $20 million. "The plant will be so designed that, with minor modifications, output can be raised to 50,000 long tons/year."

This plant—to be adjacent to ASR's 70,000-long tons/year S-type synthetic rubber plant in Louisville's Rubbertown section—at first will produce only polybutadiene, using a process licensed from Phillips Chemical. Butadiene will be purchased on the open market and shipped to Louisville by rail and by barge—just as ASR has obtained that material. And it's a good bet that Texas Alkyls—another of Stauffer's numerous joint ventures—will supply Ziegler-type catalysts for the polymerization.

Later on, the new plant will begin producing polyisoprene, otherwise known as synthetic natural rubber. And Stauffer and Thomas say they expect the new company to become a big factor in development of other economically attractive elastomers.

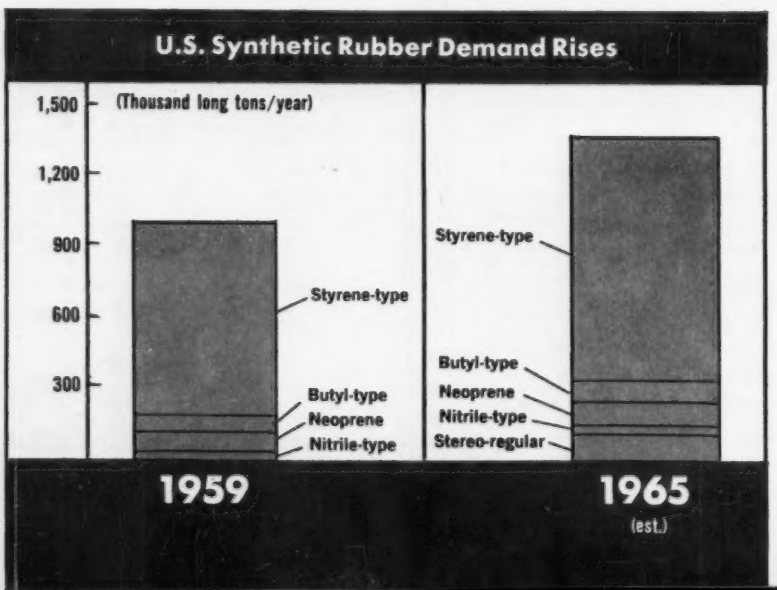
All in the 'Family': Executives of Stauffer and ASR regard their new subsidiary as a virtually no-risk investment—like government bonds, only with a higher rate of return. Except for the process and the feedstock, practically the entire operation lies within the "family circle": both parent companies will staff the subsidiary's research laboratories and pilot plant; Stauffer's Engineering Dept. will be responsible for construction; and ASR will manage commercial production and marketing. And it's likely that much of the output will be gobbled up by ASR's 28 owners, including American Cyanamid and other producers of nontire rubber products.

Even if they didn't have such a "captive market," Stauffer and Thomas in all likelihood would still have no sales problem. They expect to be able to offer their polybutadiene at 35¢/lb. or less, and note that in many applications it's superior to natural rubber (now selling at 43¢/lb.).

Phillips and Shell Lead: As of this week, it appears that the new Stauffer-ASR offspring will be vying with Goodrich-Gulf Chemicals for fourth slot in the polybutadiene race, after Phillips, Firestone and Goodyear.

Shell Chemical is sure to be first in commercial production of polyisoprene. Four of the polybutadiene entries—Firestone, Goodrich-Gulf, Goodyear, and the new American Rubber and Chemical—will be able to move into polyisoprene production after their plants are built.

Outlook for the two new elastomers is excellent. There should be no pinch on raw materials; and because of their physical and economic advantages over natural rubber—in tires and other major applications—these two new polymers are expected to sell as fast as they can be produced over the next five years.



Directions for Nylon and Rubber

2. Allied's plans for vigorous drive in nylon apparel fiber may start price strife.

Allied Chemical is taking its first steps this week toward becoming a major producer of nylon apparel fiber. Its decision to make the full range of deniers from heavy tire-cord yarn to fine apparel fiber could touch off competitive strife in pricing and merchandising of nylon.

The company has decided on Irmo, S.C., for its $35-million fine-denier plant (*CW, June 18, p. 37*). Allied has an arrangement with European spinning authority Snia Viscosa (Milan) for technical knowhow, and will be the first American company to make and sell a nylon 6 or caprolactam nylon apparel fiber in the U.S.

James Fox, president of Allied's National Aniline Division, considers the move "only a natural extension" of Allied's present range of nylon fibers (the division now produces nylon tire cord, claims 10% of the market for that product, also produces fibers for automotive fabric and carpets).

But chemical and textile industry experts weigh Allied's latest move in the light of (a) the company's inexperience in the marketing of apparel fibers, and (b) the possible difficulty of getting U.S. customers to accep' a new nylon that has somewhat different properties and "hand" than the familiar 6/6 type, which has been on the market for 20 years.

The company will merchandise its own product. Good possibility: a forceful program involving sales of fiber directly to top converters (e.g., J. P. Stevens and Burlington Mills).

Fox believes that Allied's nylon 6 will be "basically more economical" than the 6/6 type. (It's not clear whether raw materials—Allied reportedly uses its own phenol in its caprolactam production—or process would ultimately determine price.)

Allied initiated at least one recent price cut in nylon tire cord and others can be looked for, say industry sources. If the nylon 6 apparel fiber proves more economical, prices of nylon apparel fiber could follow the same downward course.

Meanwhile all nylon tire-cord producers are confidently anticipating victory for nylon in the original equipment market. Nylon has already captured a solid share of replacement-tire business. Nylon tire-cord people regard the Tyrex triumph in retaining the original-equipment tire-cord market for '61 as "only a reprieve" for rayon producers.

When nylon tire cord is accepted by the auto industry—and nylon makers consider this to be a certainty—the amount of nylon consumed for tires alone is expected to rise to about 280 million lbs./year (*chart, below*).

Growing Consumption: This year, it's estimated that 320-340 million lbs. of nylon will be sold in the U.S. for all uses. Consumption (including tire use) in '65 is estimated at about 602 million lbs. Expansion of production capacity is now under way. Latest instance: Du Pont's 60-million-lbs./-year expansion of its Richmond, Va., tire yarn plant (*CW Business Newsletter, June 18*). New capacity will be 100 million lbs./year.

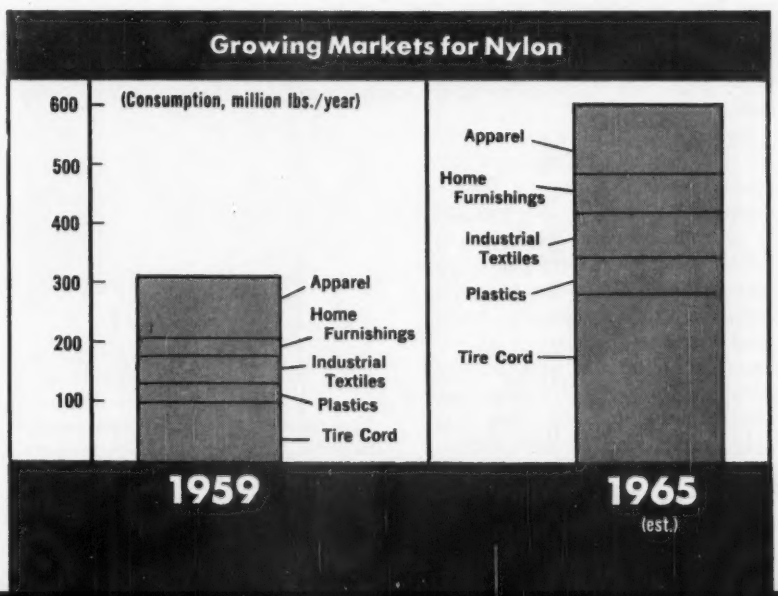
Total '59 U.S. nylon capacity—nylon 6 and 6/6—was set at about 500 million lbs. Of this only about 39 million lbs. was nylon 6. Chemstrand's President Edward O'Neal, Jr., pegs nylon 6 capacity in '62 at 135 million lbs./year.

Aside from Allied, Dow is moving strongly into nylon 6. At Williamsburg, Va., Dow is putting up a 12-million-lbs./year filament yarn plant, will get caprolactam from Dow-Badische, at Freeport, Tex. (*CW Business Newsletter, Jan. 6*). And Du Pont is building a caprolactam plant at Beaumont, Tex., though the company still hedges on its nylon 6 plans.

Future nylon market growth will be spurred by products now emanating from research. Improved textile filaments will expand existing nylon outlets and open new doors. For instance, Du Pont's new Antron trilobal nylon fiber (U.S. Patent No. 2,939,201) and Chemstrand's multilobal Cadon nylon reportedly make possible smoother, more luxurious-feeling apparel fibers.

Du Pont's Lycra spandex fiber and U.S. Rubber's Vyrene are new nylon-coated fibers, reportedly gaining quick consumer acceptance.

Significant growth in the use of nylon for carpeting is predicted for the next few years, made possible by



nylon filaments like Du Pont's 501—a yarn textured by the fiber producer rather than the processor—Chemstrand's Cumuloft, Industrial Rayon's Nyloft, and—reportedly—a still unnamed new carpet fiber developed by Allied.

Other growth areas: industrial coated and laminated fabrics, and nonwoven fabrics.

But still newer types of fibers are already threatening to push into such markets as tire cord, may shorten nylon's life span. Two possible contenders: polyester and polyvinyl alcohol fibers. And each year more yardage is obtained from the same poundage, as it is spun into ever finer, lighter fibers. Thus the price and merchandising battle can only intensify in coming years.

Rubber for India

Two projects that will start a synthetic rubber industry in India are being launched by U.S. companies this week, just as the Indian government begins to outline its $22-billion economic development program for the 1961-66 five-year period.

Synthetics and Chemicals Ltd.—organized recently by Firestone Tire & Rubber (Akron) and Kilechand Devchand and Co. (Bombay)—has awarded a contract to Lummus Co. (New York) to build India's first synthetic rubber plant, near Bareilly. The $30-million project—partly financed by an $8.25-million loan from the Export-Import Bank—will have initial capacity of 20,000 tons/year, will be "rapidly expandable" to 30,000 tons/year. It will include one plant to produce butadiene and ethylene from fermentation alcohol, another to produce styrene from ethylene and petroleum benzene (locally purchased), and a copolymerization unit.

Phillips Carbon Black Ltd.—owned 30% by Phillips Petroleum (Bartlesville, Okla.), 30% by Duncan Brothers & Co. (Calcutta), and 40% by private investors in India—will build a plant near Durgapur to produce carbon blacks from coal-tar distillates, using the Phillips furnace black process. The plant is to be in operation within 18 months, with initial capacity of 22 million lbs./year. Principal use of carbon black is in synthetic and natural rubber.

Spurring Greek CPI Growth

Last week the wraps came off Greece's biggest industrial venture in its history, a $132-million project to produce aluminum. Part of the country's first five-year plan, it is one of several CPI projects in Greece being built or planned with the participation of foreign companies.

Partners in the aluminum venture are French producers Pechiney and Ugine and Greek shipping magnate Stavros Niarchos. The group hopes to interest Reynolds Metals in joining in the project.

The plant will use locally produced bauxite, production of which has risen from 500,000 tons in '55 to 860,000 tons last year. About 90% of the plant's output will be exported. The project includes a 100,000-metric tons/year alumina plant, an aluminum plant with capacity of at least 50,000 tons/year and three hydroelectric power plants.

CPI Projects Under Way: In this first year of the five-year plan, other CPI projects have recently been launched in Greece, which hopes to enter the European Common Market soon.

Dow is about to start building its wholly owned polystyrene plant, hopes to complete it by the end of next year.

And a subsidiary of the Italian Pirelli group is starting construction of a $5-million tire plant, which, like Dow's polystyrene plant, will be the first of its kind in Greece.

Other new projects are being promoted by the new Greek development bank, Alexander Tsatsos' Industrial Development Corp., which was set up in February with 45% government ownership to promote the five-year plan.



CW PHOTO—ALFRED WAGG

Bank head Tsatsos: He seeks foreign help for five-year-plan CPI projects.

With financing by the U.S. Development Loan Fund, the Greek government is building a nitrogen plant at Ptolemais. Nearby, a 130,000-metric tons/year phosphate fertilizer plant will be built with government and private funds.

Interested foreign companies are being sought by IDC for still other projects. With caustic soda and soda ash consumption up to 9,300 and 12,000 metric tons/year, respectively, Tsatsos wants a foreign company to build—with or without government participation — a 35,000-tons/year soda plant, has commissioned Battelle Memorial Institute to conduct technical and economic studies. The government is also trying to attract investment by several foreign firms in detergent and solvent plants. It is also spurring development of wood pulp production, including the 7,500-9,000-tons/year straw-cellulose plant already under construction, and a projected 15,000-tons/year cellulose plant, for which technical studies are being conducted by a German firm, G. Jayme.

'Fair Play' for Exports?

The tables were turned last week on U.S. chemical producers, now pressing for protection against low-priced imports. Imperial Chemical Industries Chairman S. P. Chambers in essence charged U.S. companies with dumping.

In a speech to the English-Speaking Union in London, Chambers accused U.S. industry, including chemical producers, but used a slightly less inflammatory term: "unfair competition." He said that to keep plants running at capacity U.S. companies unload products overseas "at prices below full cost but just above marginal cost." In other words, these producers allegedly don't pro-rate their full costs for investment, research, etc., when calculating prices on extra goods produced for export.

British producers do the same thing to some extent, Chambers admitted. But this kind of competition hurts the British more than it does

U.S. producers, he says, because British exports represent such a high proportion of their total sales.

Chambers confined his remarks to third markets such as Africa, but European producers have been complaining of low-priced U.S. imports, which are often shipped to Dutch distributors. A stir has been caused by benzene products, particularly phenol, for example. Cut-rate styrene from the U.S. has also reportedly appeared in European markets. So has ammonium nitrate, during off-season periods.

The only solution, Chambers asserted, would be an international agreement among producers to "play fair." He doubts that this would be possible, but hopes that "common sense" of U.S. producers will lead to "fairer practices."

Buildup in Japan

There's more concrete evidence this week that Japan's chemical industry stands to become a stronger international force.

Shinetsu Chemical and Mitsui Trading Co. will build a polyvinyl chloride plant in Portugal in a joint venture with four Portuguese companies. With an initial capacity of 300-500 tons/month of PVC and related products the plant will be used as a beachhead to develop African and Latin-American markets.

In another overseas venture Mitsubishi Shoji (Trading) Kaisha has contracted to build a $6.4-million rayon mill for India's Baroda Rayon Co. Asahi Chemical will provide technical assistance.

Meanwhile a major chemical power is slowly being pieced together in Japan as merger talks between the four chemical companies in the Mitsui "zaibatsu" near an end. As separate entities, the Mitsui companies have been lagging far behind their big rivals, Sumitomo Chemical, Mitsubishi Chemical, and Showa Denko. Together they will make Mitsui bigger in chemicals than all the other Japanese firms combined.

First to merge this fall will be Mitsui Chemical and Miike Gosei, a dyestuff producer. Toyo Koatsu, Japan's leading fertilizer producer, is also anxious to merge and get on with its petrochemical plans. Mitsui Petrochemical will join the merger later.

Set for Chemical Leap

On the verge of a big jump in its already sizable petrochemical operations, El Paso Natural Gas Co. (El Paso, Tex.) is pausing to refuel financially. It's seeking more capital through a common stock offering that might raise more than $30 million.

The company will offer to its stockholders the rights to subscribe a total of 1,136,669 new shares of common stock. Any shares not purchased by stockholders will be offered to the public through an underwriting syndicate headed by White, Weld & Co. (New York).

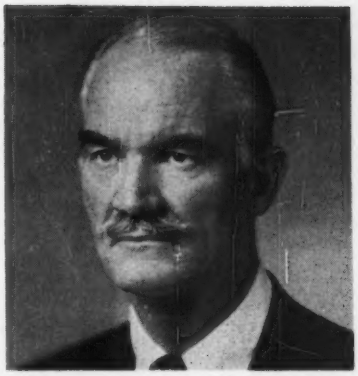
Most of the proceeds will be invested in subsidiary companies—particularly El Paso Natural Gas Products Co., which is about to embark on a multimillion-dollar plastics and chemicals joint venture with Rexall Drug and Chemical (*CW Business Newsletter, July 2*).

The parent company is a major producer of natural gas and also has substantial interests in production of crude oil and natural gas liquids. Its Products Co. subsidiary operates two petroleum refineries; has a 95% holding in Odessa Butadiene Co., whose butadiene capacity is 100 million lbs./year; is 75% owner of Odessa Natural Gasoline Co., which helps the parent company supply butane to the butadiene affiliate; and is 100% owner of Odessa Styrene Co., whose capacity for styrene monomer recently was increased from 50 million to 60 million lbs./year.

Much of the styrene and butadiene is sold under contract to General Tire & Rubber and United Carbon for production of synthetic rubber; another principal buyer of the styrene output is Rexall, which uses it to produce polystyrene plastics.

The new joint venture with Rexall calls for construction of a $40-million olefin and polyolefin facility at Odessa. Design capacity is 150 million lbs./year of ethylene and 120 million lbs./year of polyethylene. These units are to go onstream in the first half of '62.

The parent company will supply a mixed stream of ethane, propane and butane. The Products Co. subsidiary will build and operate a fractionation plant to separate those components for delivery to the Rexall-El Paso olefin plant and other purchasers.



Southwest Potash's Childs: He claims victory in potassium nitrate contest.

Potash Breakthrough

Southwest Potash Corp. last week unfolded plans for immediate start on construction of a $7-million potassium nitrate plant at Vicksburg, Miss. The move backs the company's claims of victory in the potash makers' race for large-volume, low-cost production of potassium nitrate for fertilizer and industrial use.

The new plant—scheduled to come onstream in Oct. '61—will be adjacent to Spencer Chemical Co.'s nitrogen derivatives plant. Low-grade nitric acid piped across the fence from the Spencer plant will be combined with potassium chloride shipped by rail from Southwest's mine and refinery near Carlsbad, N.M.

Output, says Southwest President Thomas W. Childs, will be chlorine-free potassium nitrate with combined potash-nitrogen plant nutrient values of 60%. This product, while previously available, has not been used extensively because of its high price. Childs believes the nitrate has important potentialities in high-analysis mixed fertilizers, particularly for tobacco, citrus and other crops that require potash and nitrogen in nitrate form but which are damaged by fertilizers containing chlorine or sulfur.

Childs also predicts that the new process will extend the industrial uses of KNO_3 "far beyond its present applications."

This will be the first chemical venture for Southwest Potash, a division of American Metal Climax (New York). The plant—which will turn out chlorine and reagent-grade nitric acid as by-products—will have barge-loading facilities on the Mississippi River.

COMPANIES

Lestoil Products, Inc. (Holyoke, Mass.), has filed with the Securities & Exchange Commission a registration statement for a proposed public offering of 275,000 stock units. These units—each consisting of one share of Class A capital stock and one share of common stock—are to be sold at $15/unit. The approximately $4 million in proceeds—plus $1.1 million previously realized on sale of stock to the organizers and an additional $3.2 million raised by sale of 6¼% notes—will be used to discharge the $6.9-million bank loan that was used to finance acquisition of Adell Chemical Co. and its two principal products, Lestoil detergent and Lestare bleach. In the fiscal year ended last Oct. 31, sales were up $2.5 million, to $22.5 million; net income, however, was down more than 50%, to $1.1 million—largely because of a more-than-50% rise in advertising expenses, to $9.6 million.

•

Reichhold Chemicals, Inc. (White Plains, N.Y.), has completed a private placement of $10-million worth of debentures. The new issue was sold to the National Bank of Detroit and five insurance companies. This placement brings the company's total of debentures outstanding to $25 million.

•

Spencer Chemical Co. (Kansas City, Mo.) has acquired Pittsburg and Midway Coal Mining Co. (Pittsburg, Kan.), following stockholders' ratification of the merger proposal. The shareholders also approved increasing the number of authorized shares from 2 million to 5 million; and the board of directors then declared a 100% stock dividend. P&M's primary business is supply of coal to electric utility companies on long-term contracts.

•

Chematomics, Inc. (New York), recently organized to produce and sell heat-resistant ion-exchange resins, is planning a public offering of 175,000 shares of common stock to start operations. Of net proceeds, $175,000 will be for equipment, $50,000 for developing a sales force, $75,000 for research and development, and $136,250 for working capital.

EXPANSION

Explosives: Hercules Powder Co. (Wilmington, Del.) will complete by Sept. 1 its new plant at Gilbert, Minn., for manufacture of commercial explosives. A new type of explosive, especially suited for blasting of the area's taconite iron ore, will be produced.

•

Acrylate Esters: Celanese Corp. (New York) will build a 14-millions-lbs./year 2-ethylhexyl acrylate, butyl acrylate and glacial acrylic acid plant at its Pampa, Tex., works. The multimillion-dollar expansion is targeted for late '60 completion, will double the Pampa plant's over-all acrylate production capacity. Glacial acrylic acid of 98% purity will be produced by a process developed at the company's Clarkwood, Tex., laboratory. The products will be sold to customers and used captively in making higher acrylates.

•

Masterbatch: United Carbon Co. will expand to 200 million lbs./year capacity of its Baytown, Tex., copolymer compounding plant. To be introduced: new carbon black—SBR masterbatch compounds to improve tire production speed. Present capacity of the plant is 150 million lbs./year. Construction is to be completed by late fall.

•

Barite Processing: International Minerals & Chemical Corp. (Skokie, Ill.) has started construction of its new, $500,000 barite processing plant at Houston, Tex. Date for completion: mid-November.

•

Amines: Pennsalt Chemicals' alkyl alkanol amines plant at Wyandotte, Mich., will be built by Catalytic Construction Co. (Philadelphia). The $1.5-million facility, scheduled for late '60 completion, will use a continuous process developed by Pennsalt.

FOREIGN

Argentina/Polyethylene: Imperial Chemical Industries (London) will build a $16.1-million polyethylene plant on the outskirts of San Lorenzo, Argentina, with capacity of 10,000 tons/year. The plant will be operated by an ICI subsidiary, Industrias Quimicas Argentinas Duperial, S.A. Last year the subsidiary embarked on a $6.7-million project to produce sulfuric acid and other chemicals at San Lorenzo.

•

Cellulosics/Pakistan: Valibhai Kamruddin (Sind), Ltd. (Karachi) is seeking participation of U.S. firms or individuals through capital, machinery or technical know-how in the establishment of a rayon yarn and cellophane plant, using cotton linters. Capacity of the proposed $6-million plant: 5 tons of rayon and 3 tons of cellophane daily. Doubling of capacity is planned. Three possible sites: Hyderabad, Karachi or Gharo.

•

Import Licensing/Pakistan: With more foreign exchange available for the second half of '60, Pakistan is putting 28 more commodities under automatic import licensing, including many pharmaceuticals, metals, rubber, chemicals and dyes. Some pharmaceuticals were already under licensing in first-half '60, and imports doubled during that period to an estimated $12 million.

•

Chemicals/Holland: Scado-Archer-Daniels N. V. (Zwolle) has established a new company, N. V. Alchemica (Schoonebeek), for production of synthetic resins, core oils and plasticizers.

Washington
Newsletter

CHEMICAL WEEK
July 16, 1960

Here's how Congress left major chemically keyed legislation as it headed for the conventions:

The color additives bill is assured of passage, requires only formal approval.

Requirement for warning labels on hazardous household products has been enacted.

Tax deferment on profits earned abroad has passed the House but appears stymied in the Senate.

•

The August session of Congress will be 100% political, may be vicious. Several important pieces of legislation will be at the mercy of the political situation.

Yet to be settled are the major issues—minimum wages, school construction, medical aid for the aged, housing.

Minimum wage: The House voted a $1.15/hour minimum and extended coverage to retail chain store workers after diluting a stronger bill. The Senate Labor Committee has endorsed a stronger, union-backed bill. A conference committee will be faced with having to settle big differences.

Medical aid: The House has passed a bill to subsidize care for very low income groups. The Senate favors a stronger measure, based on social security. Eisenhower says he would veto any plan based on social security, and prospects are very much up in the air.

School construction: The House Rules Committee is blocking a conference on different bills passed by the House and Senate providing about $1 billion in matching grants. But it's expected a modified version will pass and the President will sign it.

Housing: Bills providing about $1.5 billion for urban renewal and college housing have passed the Senate but are blocked by the House Rules Committee. Chances favor passage of some bill.

•

If Johnson should return as Presidential nominee, he could rally loyal Southern support to put across a great deal of the program. If he loses out, however, Southerners—with their powerful committee chairmanships—may feel sufficiently piqued to line up with the Republicans and torpedo the legislative program. Kennedy will be in a ticklish spot as the nominee. He would be under the thumb of the defeated Johnson, unable to call the tune on the legislative program. Republicans view this prospect with glee.

On the other hand, Johnson could go all out for the Kennedy platform as a means of protecting his majority leadership.

Washington Newsletter

(Continued)

The trade policy fight bubbled anew in Washington this week, when Tariff Commission opened six weeks of public hearings Monday on the Administration's proposed list of items on which it will offer tariff cuts at sessions of GATT next January (*CW, July 9, p. 23*).

The chemical industry, whose offer list is longest and most hotly contested, led off with strong pleas for fewer U.S. tariff cuts on many items, particularly synthetic organics.

Among the 50 or so industry spokesmen who testified this week were Monsanto's H. F. Shattuck, American Cyanamid's A. B. Clow, Du Pont's Edwin A. Gee, Synthetic Organic Chemical Manufacturers Assn. President S. G. Baker, and Allied Chemical's Arthur Schramm.

•

Election-year in-fighting over U. S. foreign trade policy points strongly to new legislation. It won't come in August, of course, or even necessarily next year. But indications are that the U. S. will have a new trade policy law by the time Reciprocal Trade Agreements Act expires in June, 1962.

The groundwork is already being laid. At Democratic party platform committee hearings in Los Angeles last week, the lobby for higher tariff protection urged platform drafters to include a plank calling for a complete overhaul of the nation's trade laws.

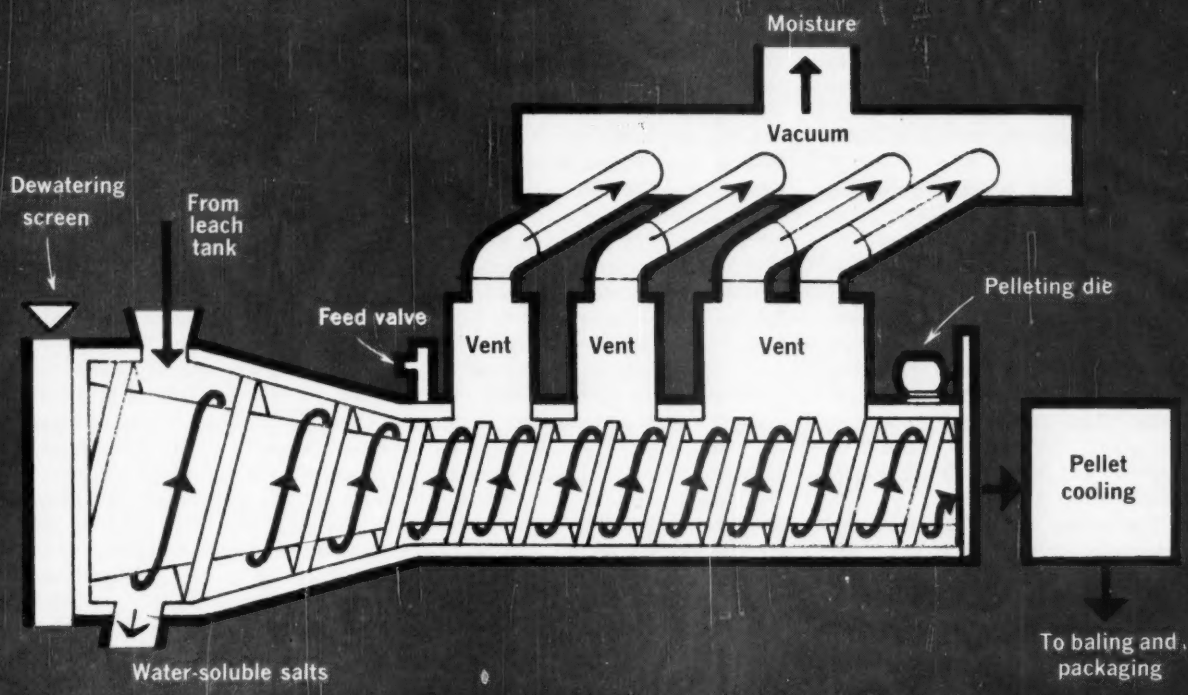
Horace B. McCoy, for years head of Commerce Dept.'s Business and Defense Services Administration and now chairman of the Trade Relations Council (the old American Tariff League), testified specifically for domestic textile mills, but—significantly—reported the same stand is being taken by domestic producers of chemicals, minerals, machines and equipment, and other imported goods. The same plea will be pressed on the Republicans at their platform hearings next week in Chicago.

Ironically, the same idea is being pushed by free-traders. The liberal-trade lobby committee for a national trade policy headed by Charles P. Taft (brother of the late senator) at a recent rally in Washington strongly urged an entirely new set of U. S. trade laws.

Those who fight each other on trade policy thus are finding themselves in agreement about the need for legislation; but they want vastly different kinds of laws, of course. Even free-traders on Capitol Hill are saying any new law will have to provide more protection for domestic industries than now exists. In fact, a half-dozen or so bellwether bills have been dropped into the hopper by senators and congressmen of both parties. These, too, vary widely from extreme protectionism to more liberal trade.

The issue cuts across party lines. So-called liberal and conservative leaders of both parties disagree with each other and among themselves. And it is no certainty that either party wants to make trade policy a big issue in the election campaign this fall. But the grass-roots pressure for a new basic trade law is building up. The fight on Capitol Hill, when it comes, will be long and bitter.

Extruder is key to shorter synthetic-rubber drying cycle



Fast New Entry Joins Rubber Drying Race

By clearly stating this week that its Institute, W. Va., plant is drying production quantities of synthetic rubber on an extrusion dryer, Goodrich-Gulf Chemicals, Inc., puts an official stamp on what has been a trade report for some time (CW, May 30, '59, p. 83). And it sheds new light on how the lines are being drawn for what may be a three-cornered battle in the rubber industry's bid for faster, more economical rubber drying methods.

In addition to Goodrich-Gulf, which worked with the National Rubber Machinery Co. (Akron) in coming up with the extrusion dryer shown above, Welding Engineers, Inc. (Norristown, Pa.) has also developed an extrusion-dryer. And, last year, The Flintkote Co.'s subsidiary, The Patent and Licensing Corp. (New York), announced that it will act as exclusive licensing agent for Paul Dasher's modified Banbury mixer technique (*also CW, May 30, '59, p. 83*), developed in cooperation with Farrel-Birmingham Co. (Ansonia, Conn.).

Goodrich-Gulf is the first major rubber maker to announce where it stands. But Welding Engineers reports that 11 companies have purchased its type of extrusion dryer. Four have pilot-plant units; four have production-size units, the first of which has been in commercial operation for about three years; three have units on order. And, P&L has disclosed that one major rubber maker is currently using its new Banbury method on a commercial basis—General Tire & Rubber Co. at Odessa, Tex., (a report General will not confirm). Farrel-Birmingham, commenting further on the Banbury in its annual report, said: "Anticipated production rates have not as yet been fully achieved, but we hope that, with further experience, the goal will be met."

The new Banbury method has actually been used commercially over the past six years by Dasher Rubber & Chemical Co. (Fairport Harbor, O.) for custom-rubber processing.

Competing Against Time: All three types of equipment are seeking to short-cut time-honored tunnel or apron drying (*see diagram, p. 40*), which takes about 1½ hours in the three-pass dryer most commonly used, according to Goodrich-Gulf. Others report even longer drying times.

Goodrich-Gulf describes its conventional tunnel drying this way: After the wet-crumb rubber leaves the leach tank, it is filtered and washed. The rubber is then broken up in a stock disintegrator and air blown to

the first pass of the dryer. The first moving dryer belt receives rubber with about 45% moisture content. Heated air, blown through the moving bed reduces the moisture content to 5% in 15 minutes. The rubber drops to the second belt, which reduces the moisture to 0.5-2.0% in 22 minutes. The last pass requires 55 minutes, cuts the moisture to 0.5% or less, and then the rubber is cooled for baling.

Wringing Out Water: In the new Goodrich-Gulf extrusion-dryer system, developed at a cost of $750,000, wet crumb from the leach tanks passes over a vibratory screen, through a feed box and into the conical section of the screw. The wet rubber travels down the flights of the screw, is compressed at an adjustable cylinder valve at the end of the section and about 80% of the moisture is squeezed out along with the water-soluble salts.

The setting of the cylinder valve determines the pressure at which the rubber is worked. (This varies from polymer to polymer.) The rubber flows through the valve in a thin sheet onto a straight, 12-in.-diameter, 22-ft.-long multiflight screw, which moves the sheet through three vacuum chambers operating at about 27 mm. Hg, where remaining moisture is flashed off. Temperature in the vacuum chambers is about 250 F. The rubber is then forced through a pelleting die, cooled and baled. Cycle time from feed box through pelleting die: 5 to 10 minutes. Design capacity is 6,000-8,000 lbs./hour; installed horsepower: 800.

The Welding Engineers' extrusion dryer has no conical section, and it has dual 6-in.-diameter screws, which create more turnover, present a thinner film of rubber for drying at a slightly lower temperature. The feed system is similar. But in the twin-screw section of the extrusion dryer before the block or valve, between 90-95% of the moisture is removed.

First models used vacuum drying, but the newer models use little or no vacuum. The working of the rubber achieves the required temperature for flashing of the moisture; and in a vacuum system, styrene that flashes off with the moisture can foul the vacuum equipment if it polymerizes, WE says. Cycle time from feed box through pelleting die is less than one minute, which gives the unit an advantage in quickly determining the effect of control changes.

Production rates on equipment now in service are about 4,000 lbs./hour; size of the equipment has been set by the production lines of the operating plants. Installed horsepower: 500, but consumed horsepower is only about 300. Cost of the units is about $250,000.

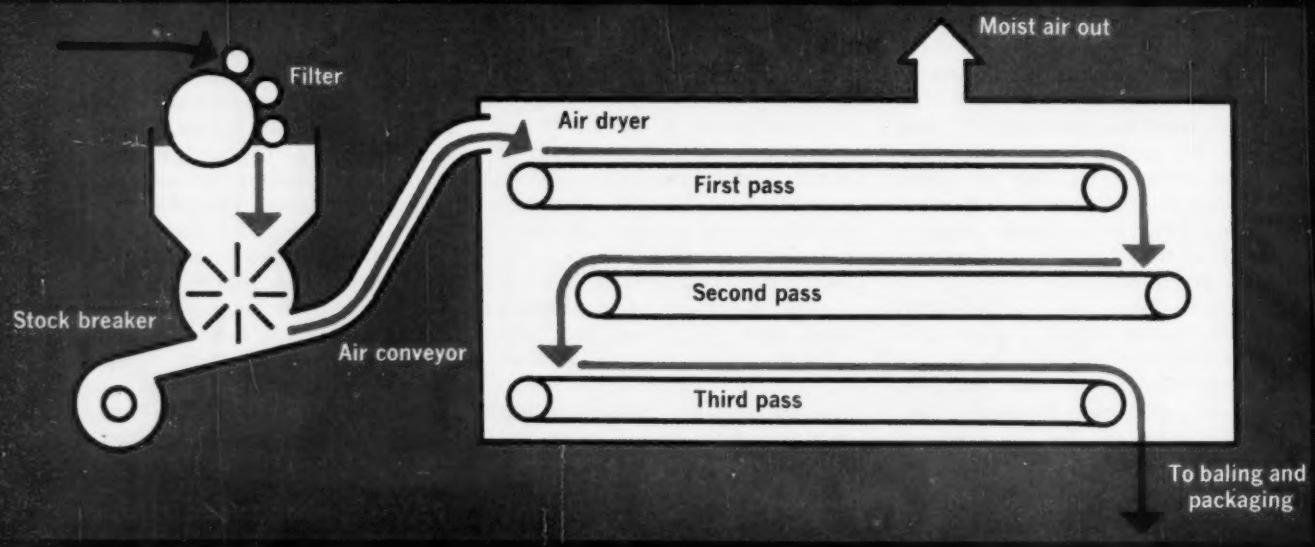
In the Beginning: Extrusion drying isn't a new idea. During World War II, the government took a look at it in an attempt to cut tunnel-drying time. But the first tries were aimed at using the extruders to squeeze out the initial moisture before passing the crumb to the tunnel dryer.

Welding Engineers began experimenting with the idea of flashing off moisture by the mechanical action of the extruder in the late '40's and was readying its first units in late '55 and early '56. Newly formed Goodrich-Gulf in '54 began its experimentation, settled on a cooperative program with NRM.

Banbury Combination: The modified Banbury method grew out of Dasher's work in reducing scrap vulcanized rubber to finely divided particles. High mechanical energy input (about 3 hp./lb. of dry rubber) generates sufficient heat within the rubber mass through shear stress and friction to obtain 250-300 F heating in less than one minute. Final drying is completed in one to two minutes. And additives (carbon black, clays, oils) can be added during drying, making the unit a cross between a dryer and a mixer.

Quick-opening doors at the bottom of the mixing chamber drop a batch before it overheats. As in the extrusion-drying processes, limiting the exposure of the rubber to high tem-

Conventional three-pass dryer

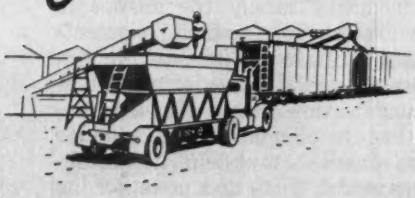


By every standard... WEST END MEASURES UP AS THE QUALIFIED SUPPLIER OF SODA ASH

- ACCURATE PROCESSING OF ORDERS
- UNIFORMLY HIGH QUALITY
- ABUNDANT STORAGE
- FLEXIBLE AND EFFICIENT LOADING AND SHIPPING
- EXTENSIVE PRODUCTION CAPACITY
- VAST NATURAL SOURCE OF RAW MATERIAL
- ALL COMMITMENTS SCRUPULOUSLY MET
- FRIENDLY, HELPFUL ATTENTION TO INDIVIDUAL NEEDS
- PROMPT, AUTHORITATIVE ANSWER TO EVERY INQUIRY

However you view your needs, you will find in West End a unique coordination of specialized services, extensive production facilities and product excellence essential to the prompt, efficient handling of individual requirements.

Flexible and efficient loading and shipping

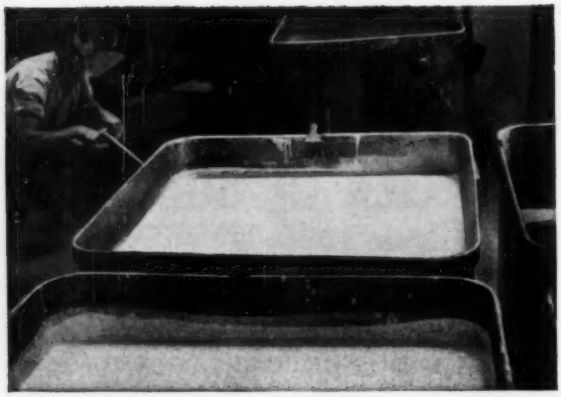


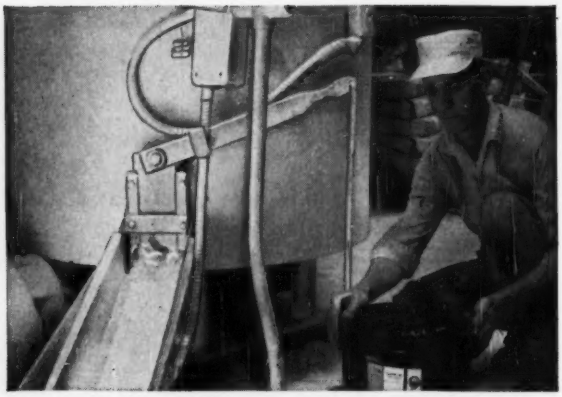
Strategic location of West End plant permits fast, economical transport by rail or truck to any point in the West or throughout the nation. 30 minute in-and-out loading for bulk trucks at any hour of day or night through "serve yourself" delivery. Immediate shipment in West End's own leased hopper cars—ready at all times.

Stauffer CHEMICALS SINCE 1885 — 75 YEARS OF SERVICE TO INDUSTRY AND AGRICULTURE

WEST END CHEMICAL COMPANY • DIVISION OF STAUFFER CHEMICAL COMPANY

636 CALIFORNIA, SAN FRANCISCO 8, CALIF. • PLANT: WESTEND, CALIF.



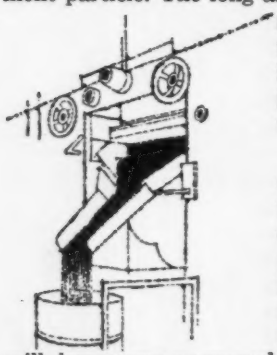


Chemicals from Armour for Pigment

Dispersion of pigments in paint, plastics or rubber is an expensive time- and power-consuming operation. Various materials are being used as "grinding aids" or "wetting agents" with only limited success. Now, Armour *cationic* chemicals supply the answer to rapid and effective dispersion of "problem" pigments where other agents have failed. The flexibility in application of these chemicals allows treatment at any time . . . either at the time the pigment is manufactured or at the time the pigment is dispersed into the medium. These chemicals have definitely established themselves as useful, time- and power-saving aids for pigment dispersion.

Paint and Pigments

Armour's *cationic* surface active agents possess a high degree of affinity for pigment and filler surfaces in the presence of oil or water. The cationic molecule orients itself on the surface of the pigment so the active, polar nitrogen is directly attached to the pigment particle. The long alkyl chain completely surrounds each individual pigment particle and alters its surface properties, causing the pigment particle to be readily oil-wetted.



Use of Armour *cationic* chemicals results in the following advantages: elimination of sweating period, reduction of grinding time, higher grind number reached with fewer passes through roller mill, less power consumed, and less pigment separation in stored paints.

Cationic treatment of pigments can be accomplished at either of two stages. The first involves pretreating the pigment prior to its incorporation into an oil or oleoresinous base. The second method adds the chemical directly to the vehicle or to the pigment-oil paste just prior to grinding. Armour's Duomeen® T (aliphatic diamine) Dioleate is equally effective in either method of use.

The necessary concentration for effective dispersion varies with the type of pigment, but the range is generally between 0.5% and 3.0% based on the dry weight of the pigment.

The table below illustrates the effectiveness of Duomeen T Dioleate in dispersion of Titanium Dioxide (RANC) in a typical alkyd on a 3-roll mill. Note the increase in ratio of pigment to vehicle when 1% of Duomeen T Dioleate is used.

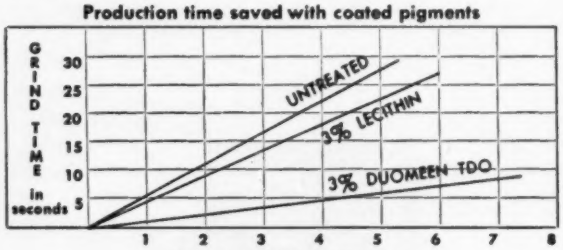
Dispersion of Pigment

Vehicle..... 32% Phthalic Anhydride Alkyd
Vehicle Non-Volatile.. 50% In Mineral Spirits
% Wetting Aid..... 1% Based on Pigment Weight

	Control		Lecithin		Duomeen TDO	
	Lbs.	Gal.	Lbs.	Gal.	Lbs.	Gal.
Titanium Dioxide.....	970	27.8	1060	30.3	1170	33.5
Vehicle.....	547	72.2	521	69.7	500	66.5
Wetting Aid.....	....	....	10.6	....	11.7	....
Total Pounds of Paste...	1517	100.0	1591.6	100.0	1681.7	100.0
Increased Pounds of TiO_2	....	....	90.0	....	200.0	....
Increase % of TiO_2.....	....	....	9.3	....	20.6	....

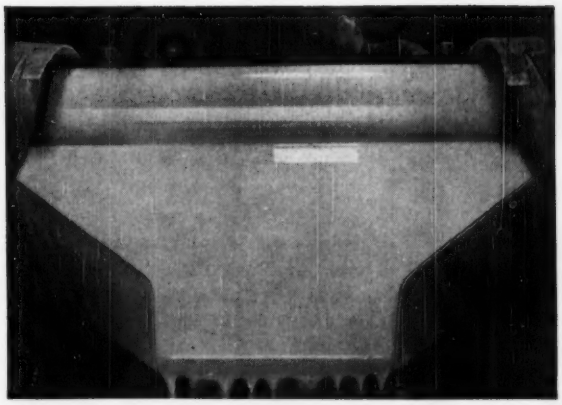
The following graph indicates the relationship of grind time to grind number and illustrates the obvious advantage from the use of Duomeen TDO.

Production time saved with coated pigments



Pigment—Chrome Green
Vehicle—24% Phthalic Alkyd (50% non-volatile in M.S.)

Duomeen TDO is effective for rapid dispersion of titanium dioxide, white lead, chrome yellow, calcium carbonate, ultramarine, chrome green, iron blue, toluidine red, black iron oxide, red iron oxide, zinc



Dispersion

oxide, chrome orange, lithophone and zinc chromate yellow.

Duomeen TDO can also be used in pigment flushing techniques. This is accomplished by mixing the water-wet pigment cake into an oil treated with the cationic chemical.

Mixtures of Arquad® 2S (quaternary ammonium chloride) and Ethomeen® S/12 (polyethoxylated amine) are also highly effective coating and wetting agents for pigment-oil systems.

Plastics

The combination of Armour's Arquad 2C and Ethomeen S/12 is used as a coating agents for pigmentation of plastics and plastisols. The use of cationic coated pigments offer numerous advantages in production and in the finished product.

By using pigments coated with these chemicals, manufacturers can lower initial viscosity, improve viscosity stability in plastisols, maintain longer working periods for the plastisols and reduce water and soapy-water extraction. Coatings of Arquad 2C and Ethomeen S/12 will also permit reduced processing time for inclusion of the pigment into the plastisol.

Rubber

Incorporation of precipitated calcium carbonate as a reinforcing agent in rubber is a difficult operation. Precoating the pigment with Armour *cationic* chemicals greatly facilitates the incorporation. Precipitated calcium carbonates may be treated in aqueous slurries by a simple process in which a mixture of 5 parts of Arquad 2C and 1 part of Ethomeen S/12 acetate is added to the slurry. A dilute solution of sodium hydroxide is then added to react with the Ethomeen S/12 acetate which releases sodium acetate and deposits a uniform Arquad/Ethomeen coating on the surface of each pigment particle. The sodium acetate is then removed by simple water washing.

Precoating the pigment in this manner changes the surface character from hydrophilic-oleophobic to hydrophobic-oleophilic, and allows the pigment to be more readily wetted by organic media.

NEW DEVELOPMENTS FROM ARMOUR

Gas Chromatography for higher product standards

Initially, Gas Chromatography was introduced in Armour laboratories as a research tool. Now, it is an integral part of quality control on production runs at the McCook, Illinois plant. Our GC was the first to be used by a producer of fatty acids. Using gas chromatography permits more rapid and exact product analyses . . . enabling us to maintain the highest purity standards in fractionated and distilled aliphatic nitrogen derivatives.

Since we are basic in fats, and are producing high-quality fatty acids, Armour is in a naturally favorable position to produce superior fatty acid derivatives. From raw material to finished product, the most painstaking and scientific quality control methods are practiced.

With the aid of gas chromatography, product molecular weight and chain length distribution can now be controlled, and we can now assure you uniform product composition from lot to lot. Armour offers 90% minimum primary amine content on undistilled products, and a 97% minimum on standard distilled products.

Leader in progressive fatty acid chemistry

Armour Industrial Chemical Company

© Division of Armour and Company

Send for information and samples

Send additional information on:

Pigment dispersants in paint ☐ . . . . rubber ☐

. . . . plastic ☐

Send a sample of _____

NAME _____

TITLE _____

COMPANY _____

ADDRESS _____

CITY _____ STATE _____

CW-7-60

Armour Industrial Chemical Company • 110 N. Wacker Dr., Chicago 6, Ill.

Specify
CENTURY BRAND
TRIPLE PRESSED
STEARIC ACID





For top quality plus cleaner, easier handling, use Harchem Century Supra Grade triple pressed crystalline Stearic Acid. It features low iodine value, high color and oxidation stability, welcome freedom from the dusting problems of flake form stearic acids.

Other Century Stearic Acids in single, double and triple pressed grades available in cake or bead form.

Write for Bulletin or consult
Chemical Materials Catalog Pages 173-175

HARCHEM® CENTURY BRAND
HARCHEM DIVISION
WALLACE & TIERNAN, INC.
25 MAIN ST., BELLEVILLE 9, N. J.
PLANT IN DOVER, OHIO
IN CANADA: W. C. HARDESTY CO. OF CANADA, LTD., TORONTO

PRODUCTION

peratures preserves strength, Mooney value and other desirable physical properties.

The modified Banbury costs about $250,000, can handle three times as much rubber as a comparably priced tunnel dryer. The unit appears to have one drawback: it is a batch operation (400 lb./batch in a No. 11 Banbury), but it has the advantages of a full-fledged mixer.

But all three units must fight the conventional tunnel dryer with more than promises of fast cycle time. The tunnel dryers are well entrenched, can't be replaced without proof of cost savings and maintenance of product quality.

Goodrich-Gulf, however, points out what some of the conventional dryer problems can be. The perforated belts often become plugged with wet rubber, and the dryers must be cleaned at regular intervals to prevent contamination. Cleaning costs can average $18,000-20,000/year, according to G-G.

Conventional evaporation also tends to retain a comparatively high amount of inorganic impurities in the rubber. And, the dried rubber can meet moisture specifications and still contain concentrated areas or wet spots that are far above moisture specs.

In number, the conventional dryers will continue to predominate rubber drying for some time. Also in number, the Welding Engineers' unit seems to have the edge in new drying systems. But which ones will win out only time will tell.

EQUIPMENT

Color-Coded Cable: Olin Mathieson's Southern Electrical Co. (Chattanooga, Tenn.) is now color-coding its aluminum cables for power distribution systems with Hypalon synthetic rubber insulation. The insulation has good resistance to weather, heat, flame, chemicals and mechanical abrasion, etc. The cable is designed for secondary and service-drop installations.

•

Contaminant Measurements: The new MF Electrobalance of Cahn Instrument Co. (14511 Paramount Blvd., Paramount, Calif.) has been specially designed to weigh all sizes of Millipore filters for determination of parti-

cle contamination in air, rocket fuels, hydraulic fluids, other liquids and gases. The balance is not affected by vibration, shock, level, humidity and temperature, will detect 1-microgram weight differences.

•

Millwright Truck: Hamilton Caster & Mfg. Co. (1700 Dixie Highway, Hamilton, O.) is out with a new 2,000-lb.-capacity millwright's wagon, said to have improved steering. The wagon has a 1-in. flange around its hardwood or steel deck for holding maintenance tools. Roller-bearing wheels have pneumatic-rubber, all-metal, molded-plastic and solid-rubber tires.

•

Ceramic Cement: Two new high-temperature refractory cements are offered by Instrumentation Associates (17 West 60th St., New York 23, N.Y.) for coating thermocouples, used as a sealing mortar and casting compound. Astroceram Type A can be air-dried, used at temperatures to 4300 F. Astroceram Type B must be fired for bonding, can be used at temperatures to 5000 F.

•

Liquid-Nitrogen Controller: For low-temperature cooling systems, Consolidated Vacuum Corp. (1775 Mt. Read Blvd., Rochester 3, N.Y.) is offering a new level controller, called Type BC-003, for electronic flow regulation of liquid nitrogen and other coolants. The unit's temperature sensing element sends a signal to the magnetic amplifier if the system's temperature rises above a preset level. A solenoid valve is opened to admit coolant, closed when lower temperature is reached.

•

Iron Pumps: Food Machinery and Chemical Corp.'s Peerless Pump, Hydrodynamics Division (301 West Avenue 26, Los Angeles 31) is offering a complete range of single- and multistage horizontal pumps that are cast in ductile iron for thermal shock and corrosion resistance. Type A is a single-stage centrifugal pump for water and liquids with some nonabrasive solids; capacities: to 60,000 gpm.; heads: to 400 ft. Types TU and TUT, multistage, are suggested for supplying, circulating and boosting water and process liquids; capacities: to 3,000 gpm.; heads: to 1,500 ft. All types have a 350 F temperature limit.



NEED A HIGH TEMPERATURE CATALYST?



USE THIS STABLE, LIQUID PEROXYESTER



t-BUTYL PERBENZOATE

What's your problem? The polymerization of acrylates? High temperature curing of polyesters? Compounding silicones, silicone rubbers or polyethylenes? For these and many other applications t-BUTYL PERBENZOATE will give you outstanding results.

Write for Data Sheet or Consult
CHEMICAL MATERIALS CATALOG
Page 199

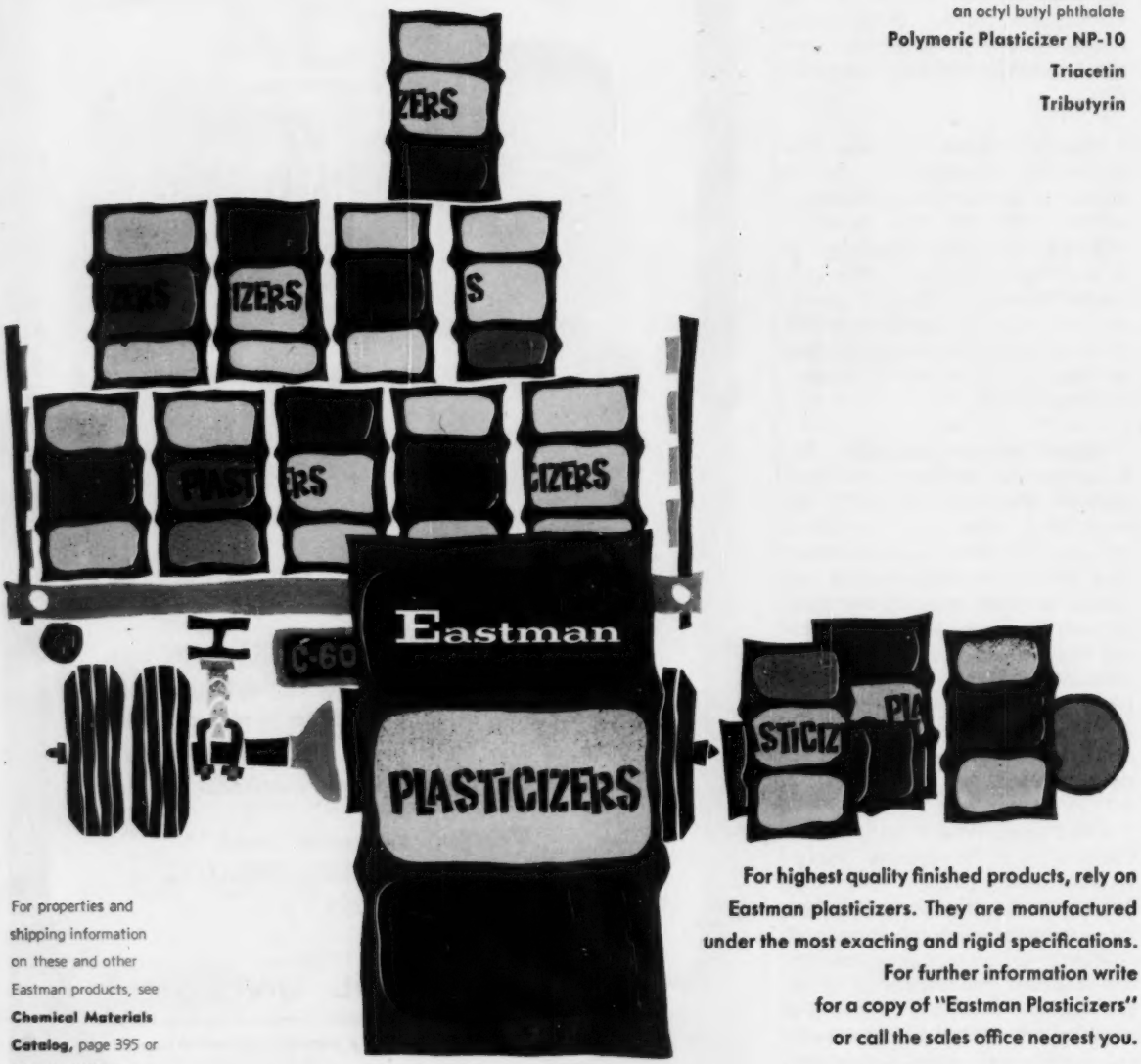


LUCIDOL DIVISION

WALLACE & TIERNAN INCORPORATED
1740 MILITARY ROAD
BUFFALO 5, NEW YORK

Eastman Plasticizers

Dimethyl phthalate
Diethyl phthalate
Di-(methoxyethyl) phthalate
Di-isobutyl phthalate
Dibutyl phthalate
Dibutyl sebacate
Dioctyl isophthalate (DOIP)
Dioctyl phthalate (DOP)
Dioctyl adipate (DOA)
Dioctyl azelate (DOZ)
Plasticizer 84
an octyl butyl phthalate
Polymeric Plasticizer NP-10
Triacetin
Tributyrin



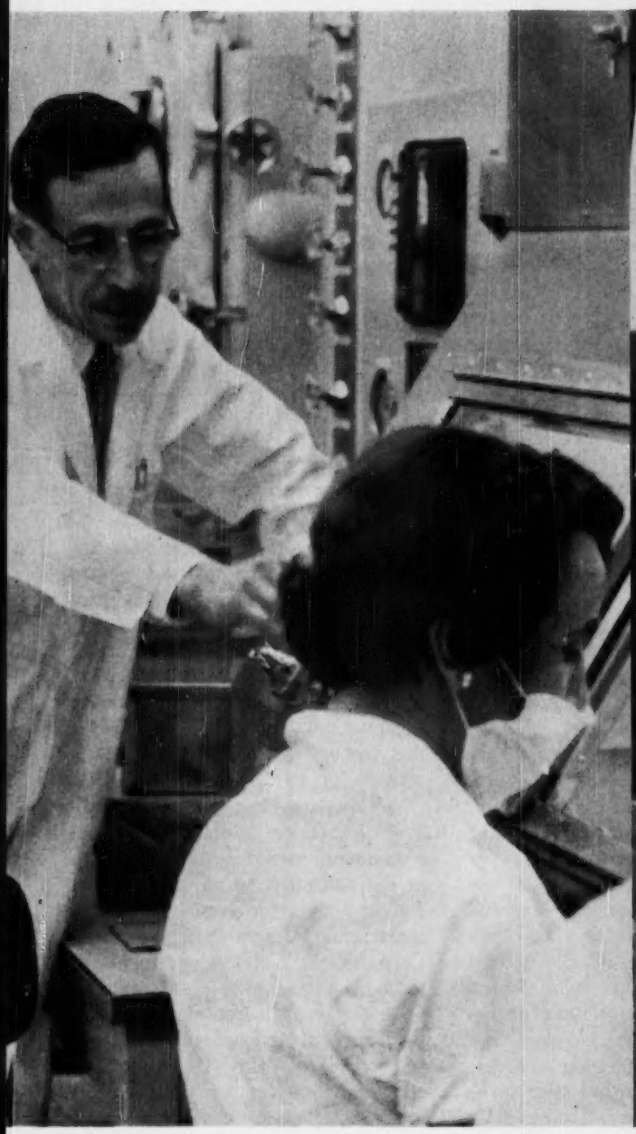
For properties and shipping information on these and other Eastman products, see **Chemical Materials Catalog,** page 395 or **Chemical Week Buyers Guide,** page 97.

For highest quality finished products, rely on Eastman plasticizers. They are manufactured under the most exacting and rigid specifications. For further information write for a copy of "Eastman Plasticizers" or call the sales office nearest you.

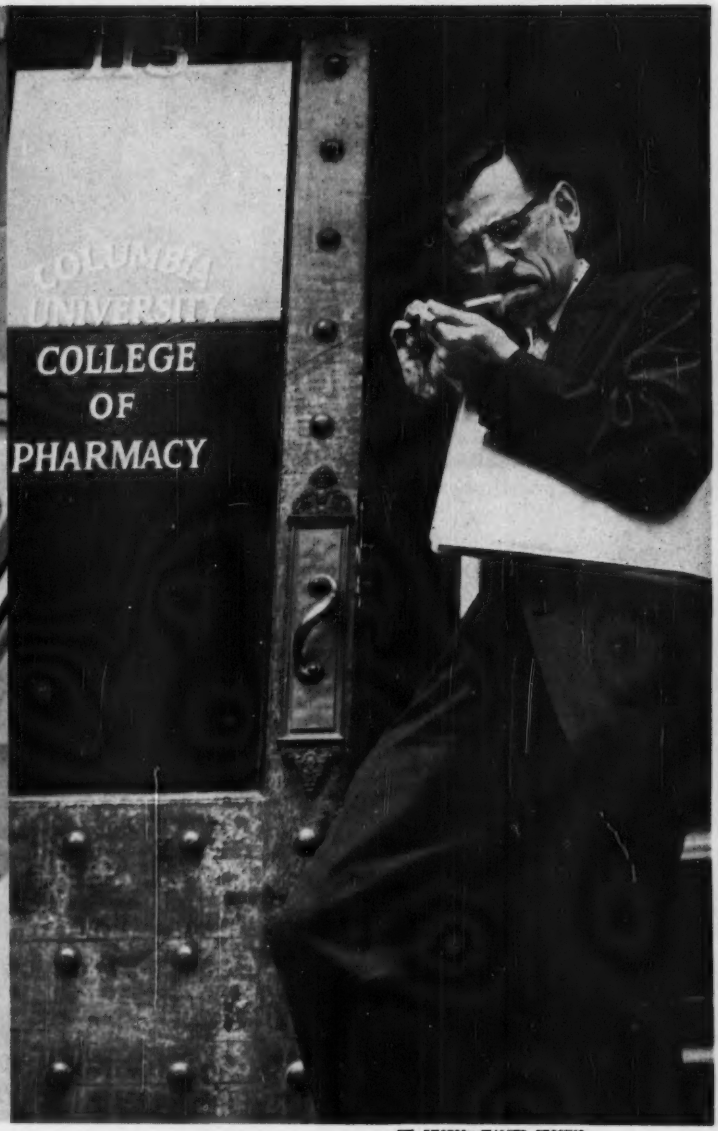
Eastman CHEMICAL PRODUCTS, INC.

KINGSPORT, TENNESSEE, subsidiary of EASTMAN KODAK COMPANY

SALES OFFICES: Eastman Chemical Products, Inc., Kingsport, Tennessee; Atlanta; Chicago; Cincinnati; Cleveland; Detroit; Framingham, Massachusetts; Greensboro, North Carolina; Houston; New York; Philadelphia; St. Louis. **West Coast: Wilson and Geo. Meyer & Company,** San Francisco; Los Angeles; Portland; Salt Lake City; Seattle.



REGULAR JOB: Ciba's Cooper guides lab staff.



CW PHOTOS—WALTER VECCHIO

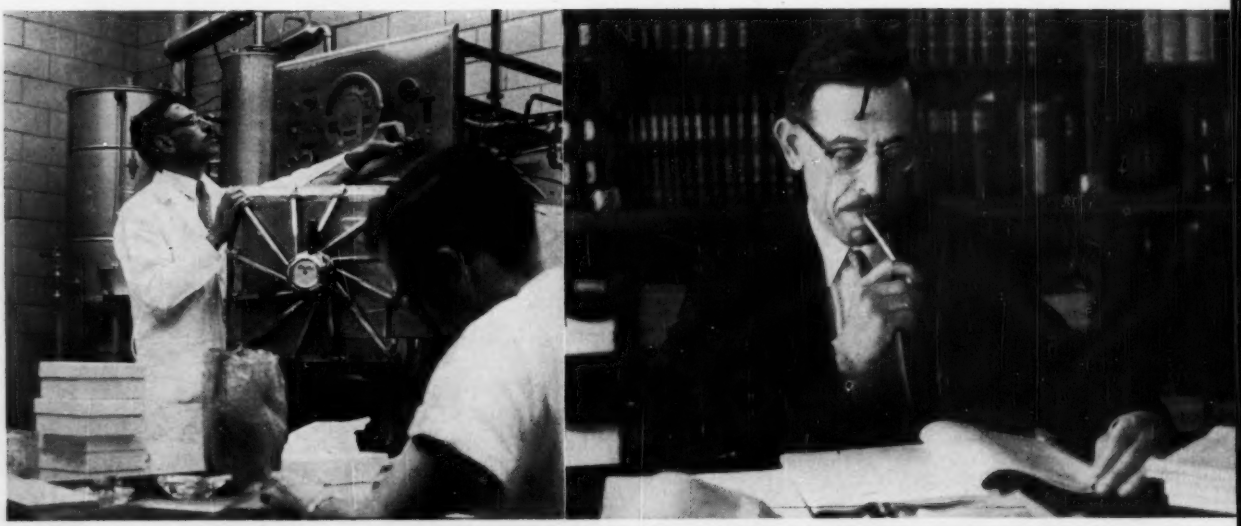
EXTRA JOB: He serves as college trustee.

Setting the Standards for Spare-Time Jobs

Stirred by public furor over outside activities by government researchers (CW Viewpoint, June 11), CPI firms are taking another look at their employees' spare-time jobs. Researchers, whose talents are often in demand for teaching, consulting, or the like, are particularly vulnerable to this reappraisal.

A nationwide *CW* survey this week shows that outside jobs claim much of the free time of busy researchers like Jack Cooper (*above*), but usually with the sanction of their employers. That's because these extracurricular activities frequently reflect credit on the man and his company alike. In some cases formal company policy on such work has been established to minimize possibilities of conflicts of interest, especially where outside payment is involved.

Cooper, director of pharmacy research and development at Ciba Pharmaceutical Products, Inc. (Summit, N.J.), was recently chosen to help write "The United States Pharmacopoeia," which details standards of drug purity and strength. (Standards are enforced by the U.S. Food & Drug Administration. FDA inspectors may check drugs at a pharmacy, wholesale house or manufacturer, and



Cooper checks laboratory sterilizer (left) as regular duty, works in the U.S. Pharmacopoeia library, still

may prosecute if USP standards are not observed.)

Cooper and 13 other experts from the drug industry were picked by a USP convention of nearly 300 physicians, pharmacists and other appointed delegates. Over the next 10 years he will help the 60-member Committee of Revision prepare the 1965 and 1970 editions of the USP.

But that's only one of several part-time jobs Cooper holds. A member of the board of trustees of Columbia University's College of Pharmacy, he occasionally lectures at the college. He is also chairman of the section of industrial pharmacy of the American Pharmaceutical Assn. and a member of the executive committee of the section of industrial pharmacy of the International Pharmaceutical Federation.

Cooper doesn't get paid for any of these jobs. They're considered an honor, and they give him an opportunity to be of service to the industry that has been his life's work.

Setting Policy: But the problem of handling outside compensation for spare-time jobs often arises. For its staff, Cutter Laboratories (Berkeley, Calif.) clarifies the company's position in this connection, in Policy A-79, titled "Noncompany Income Producing Activities of Employees of Cutter Laboratories and Affiliated Companies." The company believes that its employees other than executives should be permitted to devote noncompany time in whatever way they feel will be in their best interest, whether of an income-producing nature or not.

This lenient attitude doesn't, however, extend to executives deemed to be "sufficiently well paid that they should not need to supplement their income in this way" and should also "have the responsibility of devoting whatever time is necessary to company interests."

Cutter frowns on the practice of "any employee serving some other business activity, in a consulting capacity, for a fee." But it is prepared to make exceptions. Its policy: "In general . . . such an activity is very likely to require the devotion of time that would otherwise be spent on behalf of the company. However, we do not object to a situation whereby, upon approval by appropriate management, an employee would accept a consulting assignment for some other business activity for a fee, providing it would be practical for that employee to simultaneously rearrange his employment with the company, so that proper provision could be made, both in time and in salary, to accommodate such a consulting assignment. For example, it might be appropriate for the employee to go on half time or three-quarters time, to enable the employee to accept the consulting assignment and discharge it appropriately."

Cutter also believes its executives should accept posts as members of the board of directors of other firms (because of the honor, prestige and valuable experience that are gained both by the individuals and by Cutter), provided the acceptance of such an invitation is approved by Cutter's president. "After approval," states the policy, "such an invitation should be accepted only with the understanding that the employee has a primary responsibility to Cutter Laboratories."

A Common Theme: Company policies, formal or informal, vary, but a common thread is the avoidance of encroachment by an employee on company time for outside work. International Minerals & Chemical Corp. (Skokie, Ill.) won't permit its technical personnel to do any outside work that might be construed as conflicting with the company's interest. It approves of their writing textbook chapters, technical papers or gathering information for society presentations. But where payment of money or an honorarium is involved, the staffer must work on his own time. If the project is nonpaying and considered a public service or good public relations, the author is allowed to work on the project on company time.

Armour Industrial Chemical (Chicago) research personnel are not at liberty to sell their research ability. Other than teaching and preparing papers for technical society presentation, no outside work is permitted.

Spencer Chemical (Kansas City, Mo.) generally does not allow outside work. The company's standard



finds time for home chores (above).

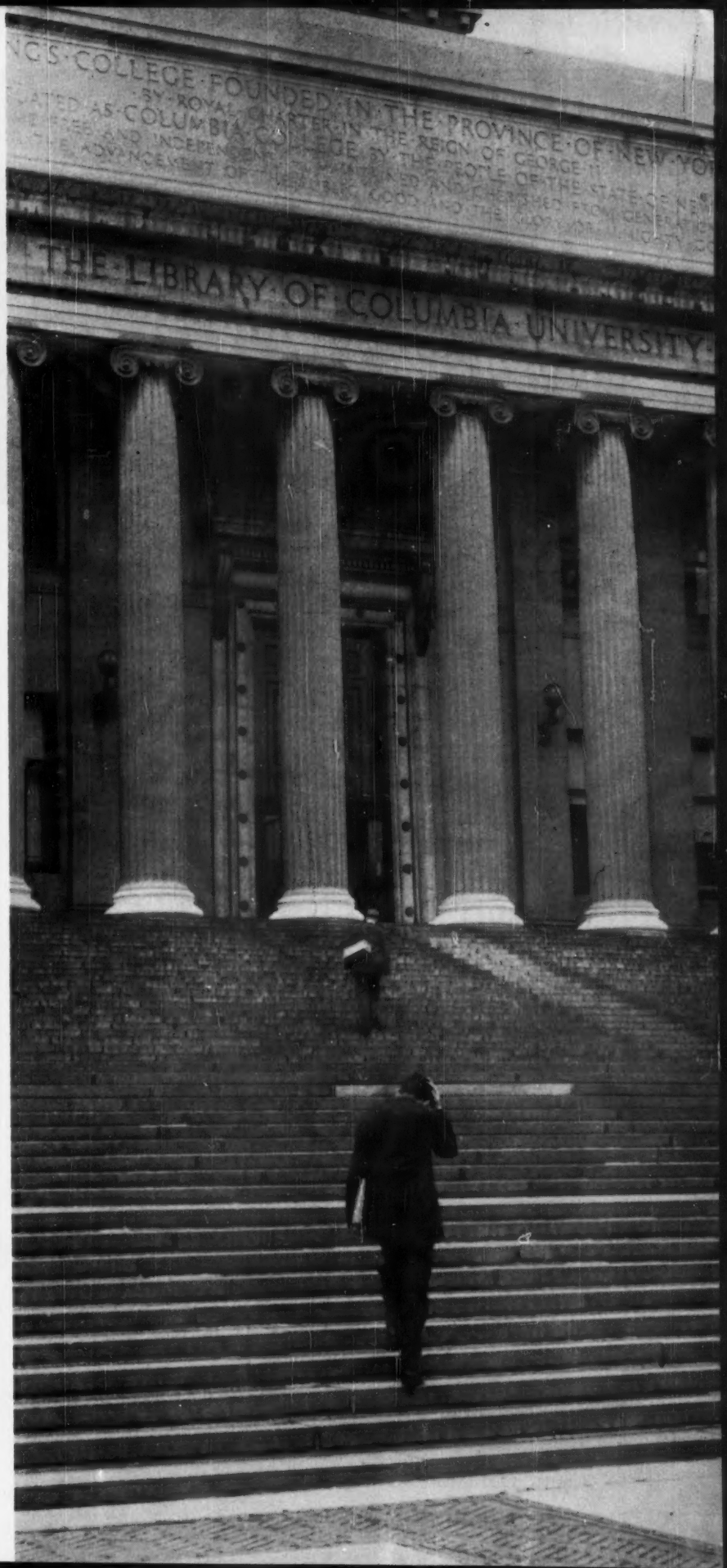
employment form includes a section covering patents, inventions, etc., that belong to Spencer if developed by an employee.

Abbott Laboratories (North Chicago) has no special policy dealing with outside jobs, explains that the situation doesn't come up often. Cases that arise are treated individually. For example, the company has approved of a number of its staff physicians working one day a week in a nearby clinic.

Eli Lilly (Indianapolis, Ind.) employees may not serve any other commercial enterprise that would conflict with the company's interests. A number of research physicians teach at local universities but donate their time. Some company people work for various government agencies and committees but also serve without pay. G. D. Searle (Chicago) does not permit outside work except on papers for technical societies.

At Armour Research Foundation (Chicago) no full-time personnel may hold consulting jobs on the outside. No night teaching is allowed without ARF approval. But an honorarium for writing articles may be accepted.

California Research, subsidiary of Standard Oil of California, does not encourage its industrial research employees to have part-time jobs or to receive pay for writing, even on a free-lance basis. The company feels that there is considerable range of opportunity in its own field to gainfully employ a staffer's time without



Hurrying to school trustee meeting.

"PIPING DESIGN"

MODELS

. . . CUT ENGINEERING COST!

IT'S A FACT!

. . . Progressive Design Firms Have Accepted The 3-D Model As A Sure Fire Tool For Getting The Job Done Faster, Better, And...At Less Cost!

"It makes sense to study and solve 3-dimensional problems using 3-D"

May We Assist You?

UNITED SCALE MODELS INC.

13 Wabash Ave. Pittsburgh, Pa.
201 Clayton St. Chester, Pa.

ARAPAHOE

ALICYCLIC COMPOUNDS

(For Pharmaceutical and Aromatic Industries)

Compound	Availability
2-CARBETHOXYCYCLOPENTANONE B.P. 122-124° C/25	Pilot
CYCLOPENTANONE B.P. 130-131°C.	Commercial
CYCLOPENTANOL (Cyclopentyl Alcohol) B.P. 139-140° C.	Commercial
CYCLOPENTYL BROMIDE B.P. 137-138° C.	Commercial
CYCLOPENTYLPROPIONIC ACID B.P. 130-132° C/12	Commercial
CYCLOPENTYLPROPIONYL CHLORIDE B.P. 81-82° C/10	Commercial
CYCLOHEXENE OXIDE B.P. 129-130° C.	Research

Write Dept. "A" for our 4-page folder and get prices of these high-quality intermediates, directly . . . or write or ask our sales agents.

ARAPAHOE CHEMICALS, INC.
BOULDER, COLORADO
PRODUCERS OF FINE ORGANIC CHEMICALS

RESEARCH

his seeking outside employment. The company does, however, underwrite "moderate participation" of its personnel in educational activities such as university teaching or contributing to scientific societies. Employees may enter competition leading to monetary gain, but the company prefers that it be in connection with some scientific society.

Stanford Research Institute (Menlo Park, Calif.) feels that outside activities must be "clearly nonconflicting" and that an employee should receive clearance from management before engaging in such activities. Participation in "parallel interests" is forbidden. SRI will pay an employee for writing, teaching, etc., rather than have him accept outside pay.

There is some indication that company attitudes are changing with relation to teaching. Dow Chemical (Midland, Mich.) has required researchers who teach chemistry in nearby schools to assign to charitable organizations any honorarium they receive, but the firm is now thinking about relaxing this rule to allow them to keep the money.

But there will be no change in a basic rule most chemical companies adhere to: if outside work interferes in any way with a researcher's regular duties, it's ruled out. By the same token, there's every sign that part-time jobs that add to the prestige of both the individual and his firm are being encouraged.

Chlorophyll Victory

Total synthesis of optically active chlorophyll *a* has been reported by Harvard Professor Robert Woodward, who first synthesized quinine, cortisone, lysergic acid, cholesterol, strychnine and reserpine. Although the new synthesis won't permit test-tube photosynthesis, it's expected to aid in determining the role played by chlorophyll in this process.

Another benefit of Woodward's four-year project—carried out with the help of 17 postdoctoral students at various times during that period—is a number of new techniques developed to overcome specific obstacles in the difficult synthesis. Details will be reported in the July 20 issue of the "Journal of the American Chemical Society."

Chlorophyll synthesis has been the

if...

- you are a young B.Ch.E.
- you have a flair for writing
- you enjoy meeting industry men and asking them questions
- you are intrigued by the broad scope of industry
- you do your best work in a fast-paced, responsible job . . .

YOU'RE OUR MAN

for an engineer-editor spot on the outstanding newsmagazine serving the influential men in the chemical process industries.

Send your resume with a covering letter to:

Howard C. E. Johnson
CHEMICAL WEEK
330 W. 42nd St.
New York 36, N.Y.





Looking toward tomorrow, visualizing the shapes and courses it will take, anticipating its needs... this search for ways to serve industry better and more fully has been an unremitting spur to Sonneborn, since many tomorrows ago. Inasmuch as this quest dates back to the turn of the century and has been concentrated upon a specialized segment of petroleum refining, it is not surprising that in products, technical assistance, service, Sonneborn Goes Further.

SONNEBORN
CHEMICAL AND REFINING
CORPORATION

White Oil Division, 300 Park Ave. South, New York 10, N.Y.

SPECIALISTS IN PETROLEUM SULFONATES (PETRONATES)
WHITE MINERAL OILS • PETROLATUMS

WO-5

We have changed our name from L. SONNEBORN SONS, INC. to SONNEBORN CHEMICAL AND REFINING CORPORATION

news briefs...

ON THE CREATIVE USE OF M & C PROCESS MATERIALS

*Better, Low-Cost Suspending Agent— new Improved Attagel® 20

Serving equally well in both organic and aqueous systems as suspending, emulsifying or thickening agents, new Attagel 20 is a colloidal grade of attapulgite. Attagel 20 disperses to an average particle size of less than 0.1 micron—in organic systems directly with use of a surfactant, in aqueous systems by application of high shear. The illustration shows the suspending characteristics and low material costs for new Attagel 20. In this evaluation the system was a red oxide-titanium dioxide pigment ground in a medium oil alkyd and reduced with mineral spirits. Pigment and oil percentages were kept constant: 13.50 red oxide, 1.50 TiO_2, and 10.00 alkyd (50% NVM). 100 ml of each sample was allowed to settle for 96 hours. The gradations in the graph denote appearance at end of the settling period (white is clear liquid). Ratio of Attagel 20 to surfactant was 3:1—however, the optimum ratios for other pigment combinations can vary and should be determined for each formulation. If you use emulsifying, thickening, or suspending agents—for organic or aqueous systems—you too can benefit from *new* Attagel 20. *Starred item* . . . check and mail the coupon.

Settling Time . . . Material Costs of Attagel 20 Formulations



Attagel 20, %	0.00	1.00	2.50	5.00
Surfactant, %	0.00	0.33	0.83	1.70
Mineral Spirits, %	75.00	73.67	71.56	68.30
Pigment-Oil, %	25.00	25.00	25.00	25.00
Raw Materials, approx. cents/lb.	7.0	7.2	7.6	7.9

Granular Herbicides do lasting weed-killing jobs...replace mowing and cultivation



Granular pre-emergence herbicides are another example of *chemicalization* to perform laborious, tedious jobs better. Corn and other row crops, rights of way for utilities and railroads, highway and turnpike roadsides, refinery and chemical plant tank farm and plant areas—all can be maintained with chemical weed killers in the manner developed for farm and orchard application.

What makes granular herbicides so much better than other methods and formulations?

results obtained at *lower cost*

ease to produce, package, store, handle

less drift in application

fall-through to soil surface instead of adhering to leaves and other surfaces

flexibility in application methods

M & C's Granular Attaclay is the most widely used carrier material for these herbicides. Attaclay's available in several size distributions to suit its jobs . . . look into it . . . use the coupon.

Minerals & Chemicals Corporation

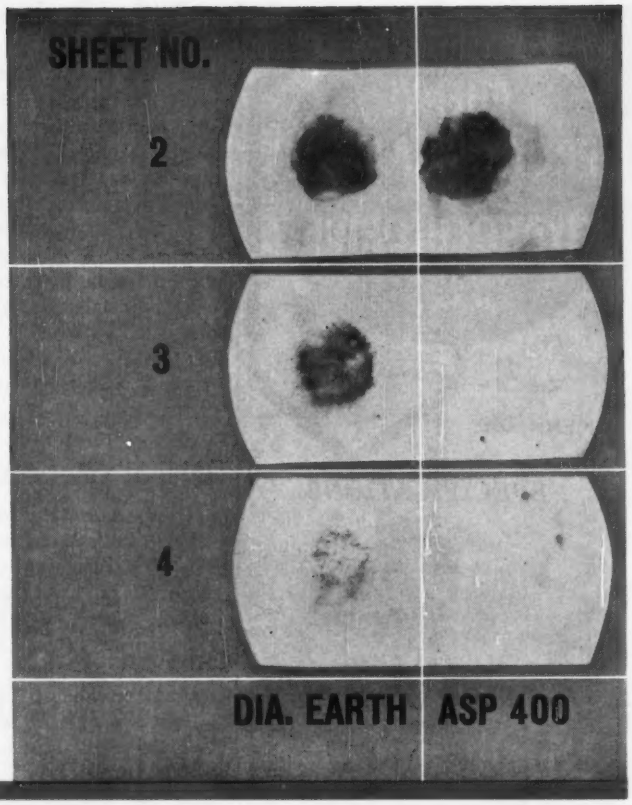
8146 Essex Turnpike, Menlo Park, New Jersey

Leaders in the creative use of non-metallic minerals

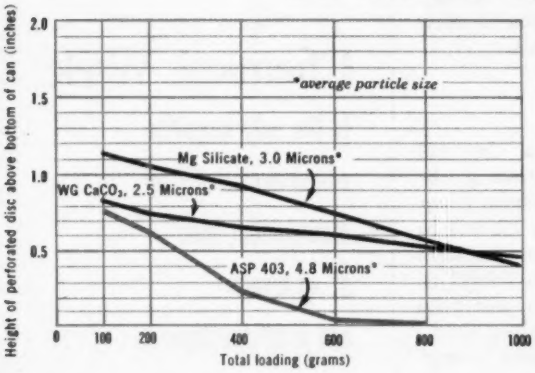
Export Department: Room 150, Garden State Parkway, Menlo Park, N. J. (Cable Address: "MICOR")

*Adhesive Users: here's superior penetration control to improve products and lower costs (test details on request)

Photo shows superiority of M & C's ASP 400 additive in keeping glue at the glue line (it hardly went beyond Sheet 2 of the stacked papers). Ability of the ASP's to prevent adhesive migration gives adhesive users such positive advantages as: increased mileage; great bond strength; dry, hard products; low costs. Would you like to extend these good points to your glue operations? If one, or both, of the faces you are gluing is porous, it can be done. This is a *starred item*. Use the coupon.



Paint Chemists: new Surface Modified ASP extender pigments add superior suspension properties to paints



Here, in graph form, is proof of the superior non-settling characteristics imparted to organic protective coatings by M & C's new Surface Modified ASP 403. Each formulation was ground 5 hours and allowed to sit on the shelf for 15 months. Then the settling characteristics of the paint were measured with the Patton Pigment Settling Gauge (test details on request). Interpretation of the results: the higher the reading, the more settling and the harder the body of settled pigment. In the formulation with ASP 403, the weighted probe went completely through the paint to the bottom of the can with minimum weight and in minimum time.

Because they're water-washed, the ASP's are virtually chemically inert materials. This explains the stability, weatherability, and color integrity which they bring to protective coatings. The water washing also assures uniformity of particle size and shape . . . makes easy dispersibility and shorter grinding time. Get the story on M & C's Aluminum Silicate Pigments . . . use the coupon.

Use this quick two-check coupon ▶

- ✓ your product interest . . .
- ✓ what you need to get tests started . . . we'll fill your requests immediately.

For more data, see your 1960 Chemical Materials Catalog, pages 451-458

of America

MINERALS & CHEMICALS CORPORATION OF AMERICA
8146 Essex Turnpike, Menlo Park, N. J.

I'm interested in:

☐ *New Improved Attagel 20; ☐ Granular Herbicide Carrier
☐ *Adhesive Additive; ☐ Paint Extenders

Please send me, without obligation:

☐ data; ☐ samples; ☐ prices; ☐ technical representative

name_____

title_____

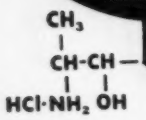
company_____

address_____

city_____ zone____ state_____

PHENYL PROPANOLAMINE HYDROCHLORIDE

$C_9H_{13}NO.HCl$



SPECIFICATIONS

DESCRIPTION:
Clean, white, crystalline powder having a characteristic aromatic odor.

CHLORIDE ASSAY:
18.9–19.2% Cl
(equivalent to 99.8%–102% $C_9H_{13}NO.HCl$)

MELTING RANGE: 194–196° C

pH (3% aqueous): 4.2–5.5

RESIDUE ON IGNITION: 0.1% (max.)

MOISTURE: 0.5% (max.)

HEAVY METALS (as Pb):
0.005% (max.)

MESH: All passes No. 20

SOLUTION:
A 3% aqueous solution should be clear, colorless and practically free from fuzz, fibers and undissolved matter.

Commercial quantities promptly available from continuous production.

Samples on request.

MANUFACTURED BY
gamma
chemical corporation
GREAT MEADOWS, N. J.
SOLE SALES AGENTS
Fisher
chemical co., inc.
355 LEXINGTON AVE., NEW YORK 17, N. Y.
MURRAY HILL 2-2587
CABLE ADDRESS: PHARCHEM

RESEARCH

goal of eminent researchers, especially Germany's Hans Fischer, for over half a century. Earlier this year Martin Strell of Munich Technical Institute reported that he had completed a chlorophyll synthesis originated by Fischer, but Strell's synthesis did not start with common laboratory reagents, and the product was a racemic mixture. Woodward completed the synthesis in January, spent the next five months separating the naturally occurring isomer from its optical twin.

Diesel Cleanup

Catalysis isn't the answer to purification of diesel exhausts, but filters may help, according to a British laboratory report. Government-supported Warren Spring Laboratory (London) says that a supported platinum catalyst—known to be effective on gasoline exhausts—proved to be of little use when tried on a diesel system. Other catalytic materials tested by the laboratory were found to be even less effective.

Tests with filters, however, were reported to be more promising. A slag wool pad removed 85-90% of the solids from the diesel exhaust, according to the report, but its effect on gases was not reported.

EXPANSION

• Owens-Illinois Glass Co. will complete a research and testing laboratory for its forest products group by late summer. The new lab will be located just south of the company's present technical center in Toledo, O.

• Callery Chemical Co. will build a new laboratory at Encino, Calif., for basic research in new energy source concepts.

• Arthur D. Little, Inc. (Cambridge, Mass.), has formed a Life Science Division to study uses of biology in industrial processes (e.g., fermentation) and to evaluate the physiological and psychological effects of synthetic atmospheres, clothes and foods on human beings. Charles Kensler is vice-president in charge of the new division.

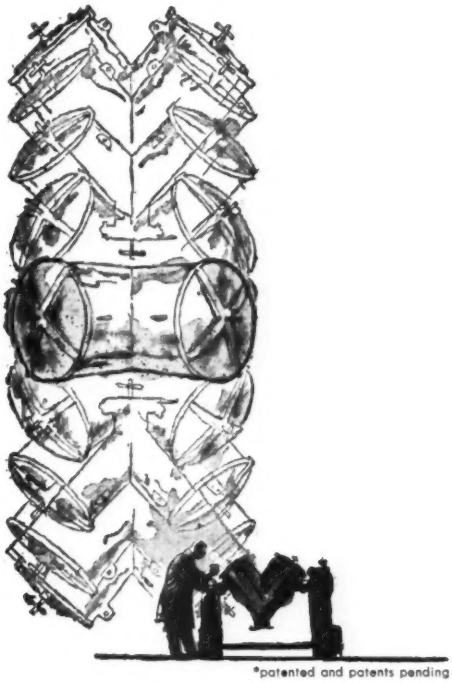
• Dyna-Therm Chemical Corp. has completed its new, $100,000 research laboratory for its Plas-Kem Division at Burbank, Calif. (*CW, June 25, p. 81*).



MEER CORPORATION
Warehoused at:
318 W. 46 St., New York 36 • No. Bergen, N. J.
325 West Huron Street, Chicago 10, Illinois
CANADA:
P. N. Soden Division, Witco Chemical Co., Inc.
Toronto 18 • Montreal 22

Chemical Week
is the only magazine
edited exclusively for
management men —
at all levels
and in all functions
here in the
Chemical Process Industries.
Read it regularly
to keep apace of your job . . .
advertise in it often
to keep ahead
of your competition.

P-K Pre-test Laboratory **pre-tests investment in solids processing** Doubts about new equipment are quickly dispelled – or confirmed – in P-K's Solids Processing Laboratory. Pre-test provides accurate scale-up data and operational procedures. It justifies investment with predictable savings in materials, labor and equipment. » » » This laboratory away from home features the new packaged P-K Solids Processor*. This latest "twin shell" development blends liquids and solids, granulates, vacuum dries, coats, reacts chemicals, sterilizes – performs as many as eleven operations – in one simple sequence.



*patented and patents pending

The P-K lab works out subtle variables in blending, granulating and drying. It demonstrates things impossible to see without pre-testing.We invite you to take full advantage of its facilities – either by bringing or sending your materials to East Stroudsburg. » » » You'll work with well-qualified engineers who have made thousands of resultful pre-tests. Your guidance will be helpful. » » » Due to the heavy lab schedule, we suggest you write or call George Sweitzer today at Stroudsburg. To call direct dial 717 – Hamilton 1-7500. He will supply you with all the pertinent information regarding dates, amount of material required, shipping and travel information.

patterson-kelley

Chemical and Process Equipment Division
116 Burson Street, East Stroudsburg, Pa.





Walt Parker, who can duplicate and study virtually every pulping problem in a specially equipped laboratory, says you'll like doing business with Columbia-Southern

In the Pulp Laboratory at Columbia-Southern's Barberton, Ohio, Research Center, Walt Parker and his colleagues set up the full range of chemical situations encountered in commercial pulp mills. Thus they can study at first hand any particular questions important to mills using Columbia-Southern chemicals. Evaluation of customer formulations and methods have led to major savings and boosts in efficiency for a large number of pulp and paper producers.

When analyzing customer problems, the Pulp Laboratory engineers work closely with customer technical personnel, carefully checking every step along the way. This relationship insures *practical* results when the findings of the laboratory are put into operation in the customer's mill.

Concern that customers are getting the most efficient use of Columbia-Southern products is a principle followed throughout all departments. It is very evident in the regular activity of the Technical Service Engineers, for example, who provide consultation on unloading, storing, and handling potentially dangerous chemicals such as chlorine and caustic —to mention just one area of Technical Service responsibility.

Customer-oriented concern all along the line explains why so many leading organizations, representing all manufacturing industries, rely on Columbia-Southern for their basic chemical needs.

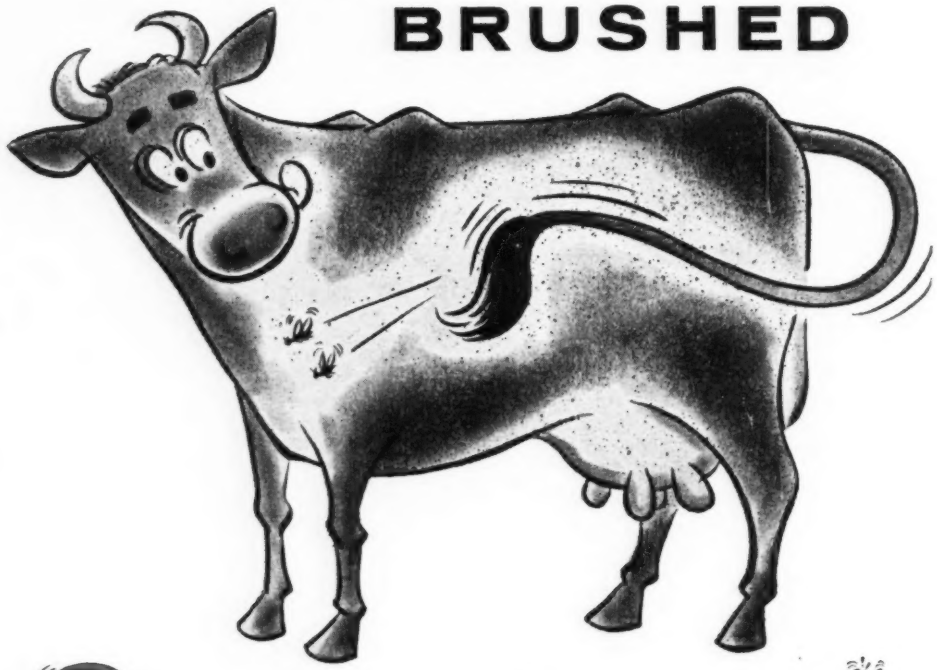
Anhydrous Ammonia, Barium Chemicals, Benzene Hexachloride, Calcium Chloride, Calcium Hypochlorite (Pittchlor®, Pittabs®), Carbon Tetrachloride, Caustic Potash, Caustic Soda, Chlorine, Chlorinated Benzenes, Chloro IPC, Chrome Chemicals, Hydrogen Peroxide, Muriatic Acid, Pacific Crystals, Perchlorethylene, Rubber Pigments (Calcene®, Hi-Sil®, Silene®), Soda Ash, Sodium Bicarbonate, Sodium Sulfate, Titanium Tetrachloride, Trichlorethylene

columbia | southern chemicals

COLUMBIA-SOUTHERN CHEMICAL CORPORATION • A Subsidiary of Pittsburgh Plate Glass Company • One Gateway Center, Pittsburgh 22, Pa.

If your product can be...

BRUSHED

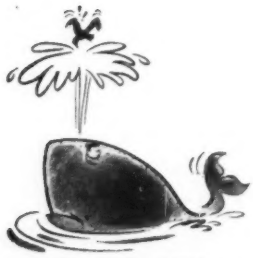




POURED



SQUEEZED



SPRAYED

...aerosol  packaging may be more profitable  for you

Does your product meet the requirements above? If so, there's a good chance aerosol packaging can revolutionize your sales as it has for manufacturers of hair fixatives, insecticides and many other products.

Aerosol packaging offers customers the neatest, quickest, handiest way ever to apply a product. Result—aerosols are increasing their share of the consumer market every year.

Get the complete story. It's easy to have your product tested by a custom loader—no need for your own loading line. Let Du Pont send you technical data and the names of aerosol loaders. It's one of the many services offered without obligation by Du Pont, manufacturer of time-proved "Freon" propellents for aerosols.

FREE BOOKLET, "Package for Profit", contains information on how you can enter this field without major capital investment . . . includes marketing and technical data. For your copy, write: E. I. du Pont de Nemours & Co. (Inc.), "Freon" Products Division, 2420N-337, Wilmington 98, Delaware.

Best-selling aerosols are powered with

FREON® PROPELLENTS

DU PONT
REG. U.S. PAT. OFF.

BETTER THINGS FOR BETTER LIVING...THROUGH CHEMISTRY

Samples: New Edge for an Old Sales Tool

Steadily rising chemical sampling costs have again turned the spotlight on the problem of how to boost the sales mileage of samples. Last week Pittsburgh Chemical Co. (subsidiary of Pittsburgh Coke & Chemical Co.) and Monsanto Chemical Co. revealed plans to revamp their product sampling programs to increase the return, decrease the costs. Their move signals growing CPI industry concern about the rising volume and cost of chemical sampling programs.

The most obvious course for companies seeking to streamline their sampling operations: improve efficiency and speed of delivery by eliminating unnecessary paperwork.

Example: Pittsburgh Chemical's John Weinert (*picture below*) says his firm's new stripped-down sample-handling system provides customers with samples more promptly and at less cost. "Now we've got firm control over our whole sampling setup. Before, it was like shooting arrows into the air."

Here are chemical process industries' comments on important aspects of chemical sample handling:

What's a Sample? Basic to the problem of how to manage a sample program, of course, is the question of whether a sample is free or a chargeable "small order."

Although virtually all chemical producers gladly supply samples to prospective customers, the amounts sent and methods of handling vary widely among segments of the CPI. A few firms charge for samples, consider them as small orders (*CW, May 30, '59, p. 57*). Even some of the noncharging companies are now taking a second look at the giveaway policy, likely will start making nominal charges to test recipients' interest, recoup at least some of the expense.

Some companies have rigid limits on sample size or value, charge for all samples that exceed limits or call for special preparation.

Consensus: size of a sample is adequate if it is enough to obtain suitable test results. For plastics and resin producers, samples range from a 50-lb. can to a 1,000-lb. lot, depending on use of the material.

Agricultural chemicals producers' samples vary from less than 1 lb. to about 10 lbs., while many industrial chemicals producers send samples of up to 55-gal. drums. A few companies even send tank-car quantities as samples. And one Midwestern producer of heavy inorganic materials tells CHEMICAL WEEK that samples valued at more than $25,000 have at times been sent to prospective big-volume customers.

Conversely, the same firm often sends samples as small as 100 grams, and Monsanto and Harshaw Chemical Co. (Cleveland) report they consider 1 to 2 oz. of high-cost materials sufficient.

Most companies report that they give liquid chemical samples in quantities of 1 pt. to 5 gal. Glass containers are widely used for such shipments, but polyethylene is gaining favor because of its chemical inertness, lightness. Hazardous chemicals, however, generally are not shipped in sample lots.

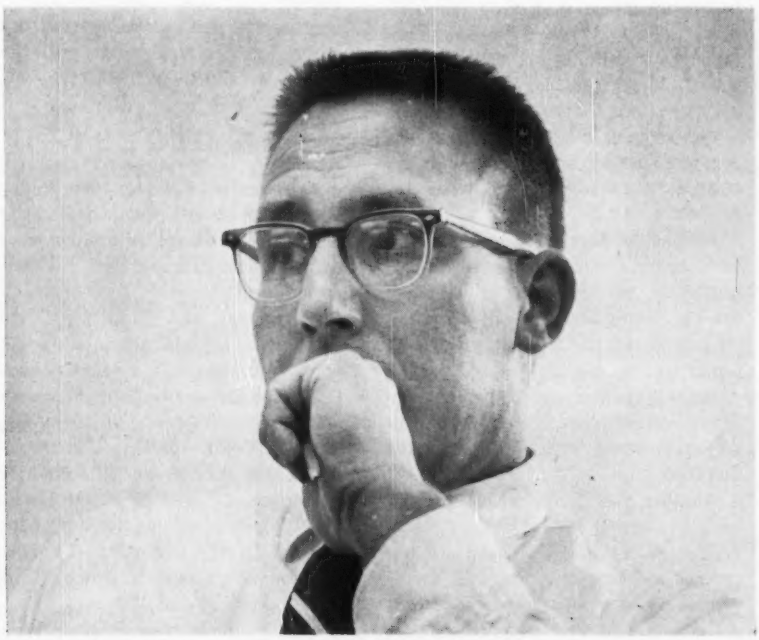
Holding Down Costs: Most companies report that samples and sample-handling procedures are quite costly and becoming even more so. But it's not generally the cost of the sample material itself that runs up the tab; rather it's the administrative expenses (recordkeeping, invoices, etc.) and handling and mailing costs, say most firms.

Monsanto figures its per-sample costs at something like $10/year. Harshaw's costs of administering its sample program, exclusive of product or shipping, had been in the $10 range. But it recently shuffled its sample-handling procedures, cut the tab to $2.

Organized Sample-Handlers: Cost-per-sample figures tell only part of the story. A fuller pictures emerges from CPI firms' estimates of total costs of sampling.

Reichhold Chemicals Co. (White Plains, N.Y.) estimates its annual sample bill at about $250,000. American Cyanamid spends nearly that much on samples through its Plastics & Resins Division ($100,000), Industrial Chemicals Division ($34,000) and Agricultural Chemicals Division ($76,000). Lederle Laboratories' annual sample bill is approximately 10% of its total promotional costs.

Clearly, product samples represent



Pittsburgh's Weinert: 'It was like shooting arrows into the air.'

a significant part of total cost of selling, and most sales managers keep a close watch over sample volume, costs and results.

To do this, some firms—e.g., Dow Chemical Co. (Midland, Mich.), Stepan Chemical Co. (Chicago) and Wyandotte Chemicals Corp. (Wyandotte, Mich.)—have set up specific departments or groups to sample operations. Dow's group was organized in '32, now keeps 20 men busy filling, packing and processing nearly 100,000 samples annually.

But other companies prefer decentralized operations. Reason: since sample-handling groups often stock products for considerable periods of time and may not have products representative of current plant production, many firms prefer to ship samples direct from current production. One company sets aside half a ton of each new product for sampling before it even publicizes it.

Most sample requests (65-70%) are handled through the salesman, while the biggest part of the remainder results from inquiries based on advertising.

Most companies mail their samples, but a few prefer to have salesmen deliver them, count on more accurate reports on the use of samples so they may follow up and get new business immediately.

One company reported this dramatic advantage in having its salesmen deliver samples: a salesman, making a call to sell antifoaming agents, found that his customer was having serious foaming problems. The salesman took out a sample of his product, sprayed the material into the customer's tanks, showed what his product could do.

Behind the Sample: Companies use samples for a variety of reasons. Most important, of course, is to win new sales by giving proof of product quality and performance, letting the customer try the material himself.

Sales managers say that one well-timed sample can do more to win an order than reams of technical literature.

Another job for samples: to win back business by showing a marked product improvement. This use is important to chemical companies involved in a constant campaign to upgrade specifications and performance.

Another function performed by samples is that of proving out logical —yet untried—uses for a product. But samples often prove even more valuable than this by pointing up applications for the product that may have been overlooked in the commercial development. In fact some companies tell CHEMICAL WEEK they count on their prospective customers to come up with uses for their new products that were not apparent to their own research and development staffs. In this respect samples serve a useful purpose in market development.

Possibly the most questionable function for samples is their use as a veil for price "breaks." Some plastics producers, for example, quote prices essentially competitive with those of other producers, then use free samples of several thousand pounds to give customers what amounts to cut-rate prices. And several agricultural chemicals makers allege that the same practice is prevalent in their industry.

Outlook: As sales management puts its finger on areas that are ripe for cost-cutting, it's a good bet that sample distribution will come in for close scrutiny, perhaps some cutting of "fat." For, despite their value as a sales aid, samples are costly. And most companies feel that both volume of samples distributed and the cost per sample will continue to rise through '60 and into '61. The big challenge for sales management is to make these sample costs pull their weight in added business.

DATA DIGEST

• **Chemicals Catalog:** New 36-page booklet presents alphabetical listing of company's chemical products along with physical data and uses. Included: agricultural chemicals, food chemicals, intermediates and plasticizers, construction materials, soaps and detergents, plastics and synthetic fibers. Chemical Divisions, Food Machinery and Chemical Corp. (161 East 42nd St., New York 17).

• **Latex Binder:** Bulletin describes properties and uses of a new butadiene-styrene latex binder for paper coating. Dewey and Almy Chemical Division, W. R. Grace & Co. (Cambridge, Mass.).

• **Butynediol:** New 35-page booklet outlines the reactions and uses of butynediol. Material is available in several forms: 35% aqueous solution, or solid form of either 99% or 97% purity. Among the uses: acid pickling of metals, electroplating, hydrocarbon stabilization and plant defoliation. Antara Chemicals Division of General Aniline & Film Corp. (435 Hudson St., New York 14).

• **Zirconium:** Handbook on zirconium data contains numerous charts, pictures, tables and graphs on properties, fabrication and uses. Also covered: properties of zirconium alloys and chemicals, electroplating procedures and powder metallurgy applications. Carborundum Metals Co. (Akron, N.Y.).

• **Flavors:** New 32-page booklet describes company's line of flavoring materials, essential oils, aromatic chemicals and resinoids. Florasynth Laboratories, Inc. (900 Van Nest Ave., P.O. Box 12, New York 62).

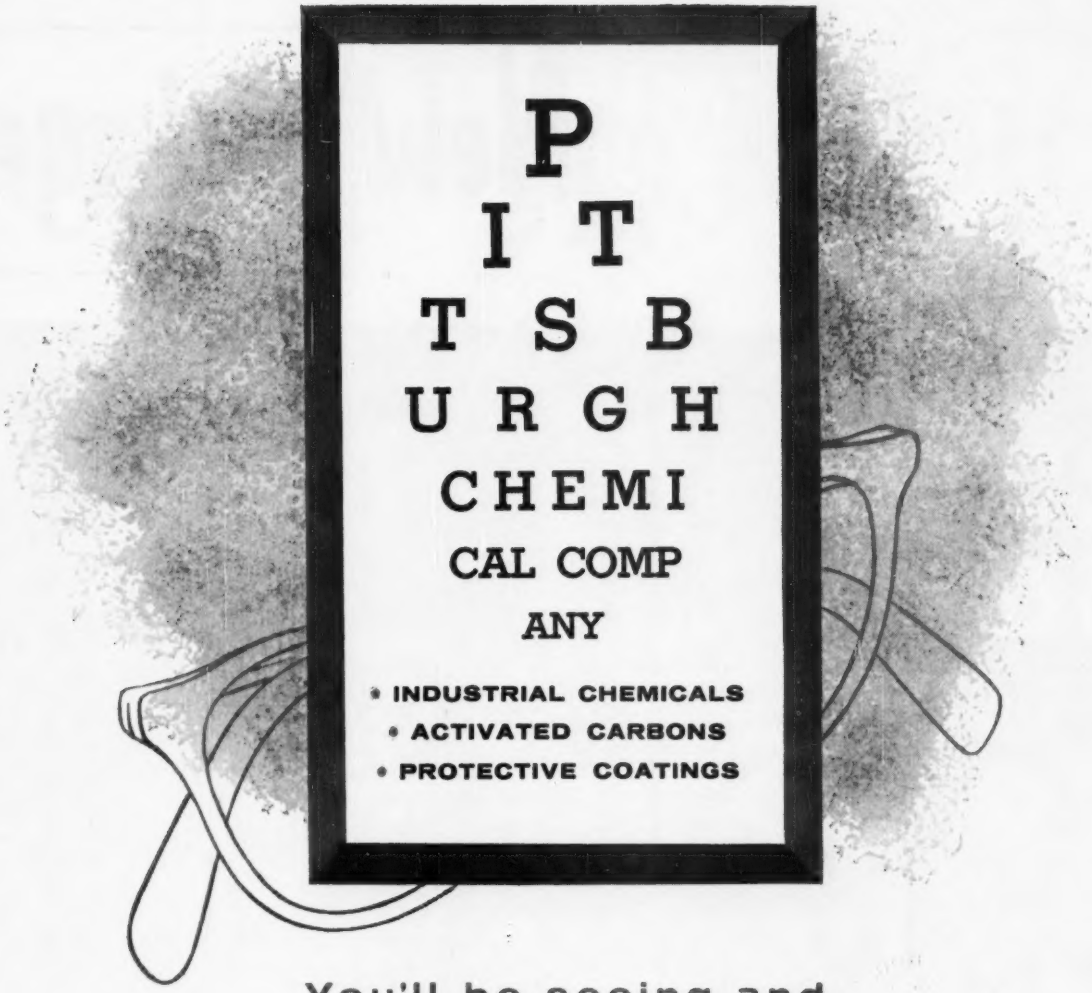
• **Sulfur Trioxide:** Bulletin (I-178) describes the chemical and physical properties of stabilized liquid sulfur trioxide, lists some typical uses. Inorganic Chemicals Division, Monsanto Chemical Co. (St. Louis 66, Mo.).

• **Adhesive Material:** Folder describes uses of sodium silicates for laminating, pasting and sealing paper, metal foil, ceramics, asbestos, mica, wood, nylon. Philadelphia Quartz Co. (Philadelphia 6).

• **Fine Chemicals:** New price list includes nearly 100 new compounds among the 300 amino acids, biochemical reagents, purine and pyrimidene compounds and other fine chemicals. Schwarz BioResearch, Inc. (230 Washington St., Mount Vernon, N.Y.).

• **Chemical Fabric Conditioner:** New booklet has data on the properties and uses of dimethyl distearyl quaternary ammonium chloride as a fabric conditioner, particularly to impart softness and improved handling qualities to cellulosic fabrics. Armour Industrial Chemical Co. (Chicago 90, Ill.).

• **Resins for Rubber:** New, 16-page booklet (S-79) discusses properties and uses of resins for compounding rubber and rubber-based adhesives. Included: major types of phenolics, terpene-phenol resins and pure hydrocarbon polyterpenes. Rubber materials described: butyl, neoprene, nitrile, SBR, natural and reclaimed. Schenectady Varnish Co. (Schenectady 1, N.Y.).



You'll be seeing and hearing more of this name because it means something extra to America's process industries

For more than a decade, America's process industries have been calling "*Pittsburgh Coke*" for top quality industrial chemicals, activated carbons and protective coatings. Today, these same reliable products are available by calling "*Pittsburgh Chemical.*"

Pittsburgh Coke's Industrial Chemicals, Activated Carbon and Protective Coatings Divisions and their supporting technical departments have been combined in a wholly-owned, autonomously operating subsidiary—*Pittsburgh Chemical Company.*

By concentrating our activities *exclusively* in chemicals and chemical products, Pittsburgh Chemical Company is now able to serve its customers more efficiently than ever. A long-range growth and development program is already underway. It includes a steady expansion of our own production and marketing facilities.

But its *main* objective is to help our customers reduce costs, improve production and increase profits. For *our* growth depends largely upon the growth and prosperity of our *customers.*

Write, wire or phone us by our new name—*Pittsburgh Chemical Co.*—and watch things happen . . . *for you!*

A Basic Producer of
INDUSTRIAL CHEMICALS • ACTIVATED CARBONS
PROTECTIVE COATINGS
for Chemical • Paint • Plastics • Petroleum • Marine and Process Industries

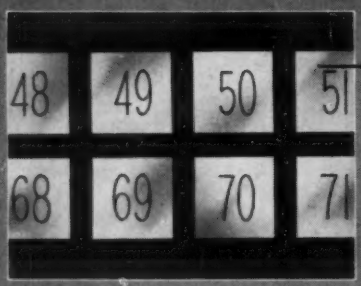
PITTSBURGH CHEMICAL CO.
GRANT BUILDING PITTSBURGH 19, PA.

1751

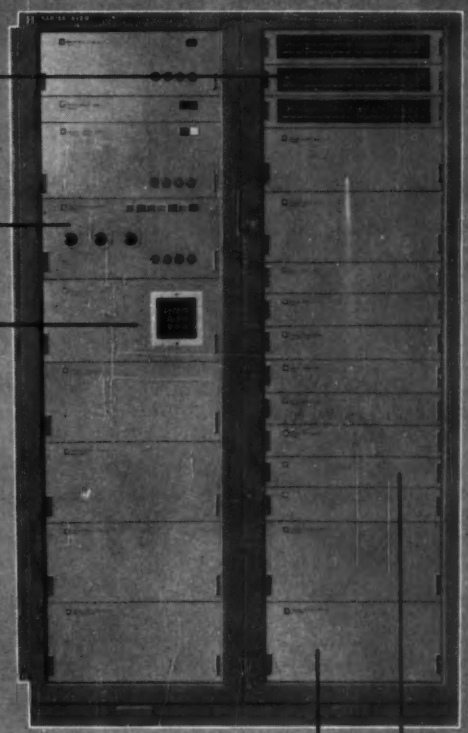
A Subsidiary of PITTSBURGH COKE & CHEMICAL CO.

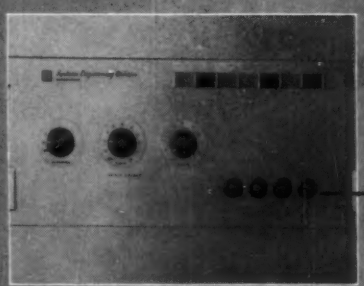
Regional Sales Offices: Pittsburgh • New York • Nashville • Chicago • Houston • Los Angeles • San Francisco

New packaged

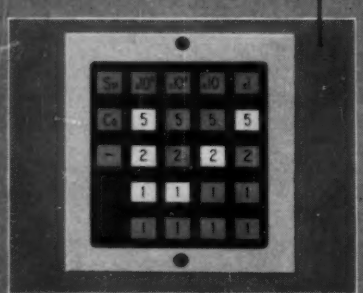


THREE 40-POINT ANNUNCIATORS make it easy for the operator to tell at a glance which variables are off-normal.





DIGITAL VISUAL DISPLAY and variable selector switches make it easy to select any single variable and watch all trends and changes continuously.



SERVICING IS SIMPLIFIED by an indicator-light panel showing the completion of each step in the analog to digital conversion. The sequence programmer can be changed from automatic to hand advance to permit operator to check each step.



UNIQUE INPUT SELECTOR is unusually dependable because of its sealed, oil-immersed construction. Servicing is normally limited to visual inspection every 6 months. Drawers pull out so voltage checks can be performed without shutting down system.



PINBOARD PROGRAMMING adds flexibility. You can change the logging or scanning sequence at will . . . substitute one type of input for another. Range, span, and zero adjustment are set by inserting pins in their proper places. No calculations are required. The pinboards are pinned in familiar units of measurements.

Honeywell logger-scanner

...accurate within ± 0.1% of reading

...pinboard programming for maximum flexibility

Here's a standard, all-purpose 120-point logger-scanner system with features formerly found only in more expensive, custom-designed equipment . . . the first of several packaged logger-scanners being introduced by Honeywell. It offers the ultimate in accuracy, flexibility, dependability and simplicity of maintenance. Wide ambient temperature operating limits—60 to 120°F—eliminate the need for special air conditioning equipment.

The Series 3120 accepts signals from primary measuring instruments—thermocouples, flow, pressure or other transducers. It measures these signals, digitizes them, and prints their values in immediately usable form. A thermocouple reference oven can be supplied to accommodate three types of thermocouple inputs—types T, J, and K—which are automatically linearized over their entire range to within 0.1% accuracy.

The operator can select either automatically or manually initiated logging cycles. He can set the system to log all variables automatically at preset intervals, or manually energize the system to operate on demand, between logging cycles.

Between logging cycles, the system can scan off-normal alarm points—high, low or both—at a rate of 7 points per second. Upon detecting an off-normal point, the system sounds an alarm, lights a point-identification light, and prints the time, point number and off-normal value on adding machine tape. During log cycles, off-normal points are printed in red on the log sheet.

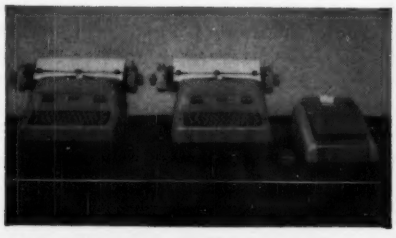
Get complete details from your nearby Honeywell field engineer. Call him today . . . he's as near as your phone. MINNEAPOLIS-HONEYWELL, Wayne and Windrim Avenues, Philadelphia 44, Pa.

75th YEAR — PIONEERING THE FUTURE

Honeywell

First in Control

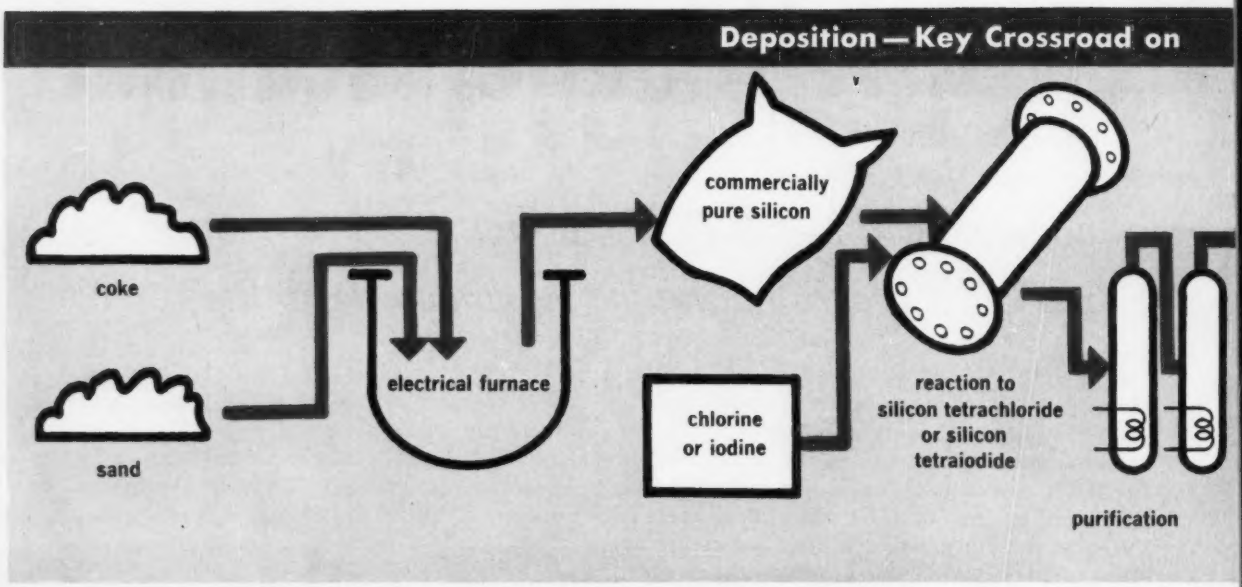
SINCE 1885



TWO TYPEWRITERS permit a single line log allowing columnar comparisons. Separate alarm printer records all off-normal variables.



STANDARD MODULAR COMPONENTS are assembled on chassis mounted as individual drawers in relay racks. All drawers are connected by plugs for easy servicing.



Chemical Processes Lead Race

New moves in hyperpure-silicon production underscore the major question facing manufacturers today: Will their current processes enable them to meet the potential demand for increasing quantities of an even less-costly boron-free product? Answers, reflected in company action, have been varied:

(1) Foote Minerals Co. (Philadelphia) has dropped pure-silicon production after over 10 years' research.

(2) Eagle-Picher, the U.S.'s leading hyperpure-germanium producer, has dropped silicon after a late start.

(3) But Du Pont has started up its Newport, Del., plant, producing silicon by the silane process, which boosts product purities, compared with its silicon tetrachloride reduction process already in operation at Brevard, N.C.

The philosophy behind Du Pont's starting the Newport plant points up the commercial competition in silicon processing. Hyperpure silicon has already established itself as an essential component for heavy-duty power transistors and current rectifiers. Now there are good chances for the use of silicon in less severe applications (e.g., in autos, an alternator to replace the conventional generator). And the silane plant is Du Pont's move to be ready for these potential markets.

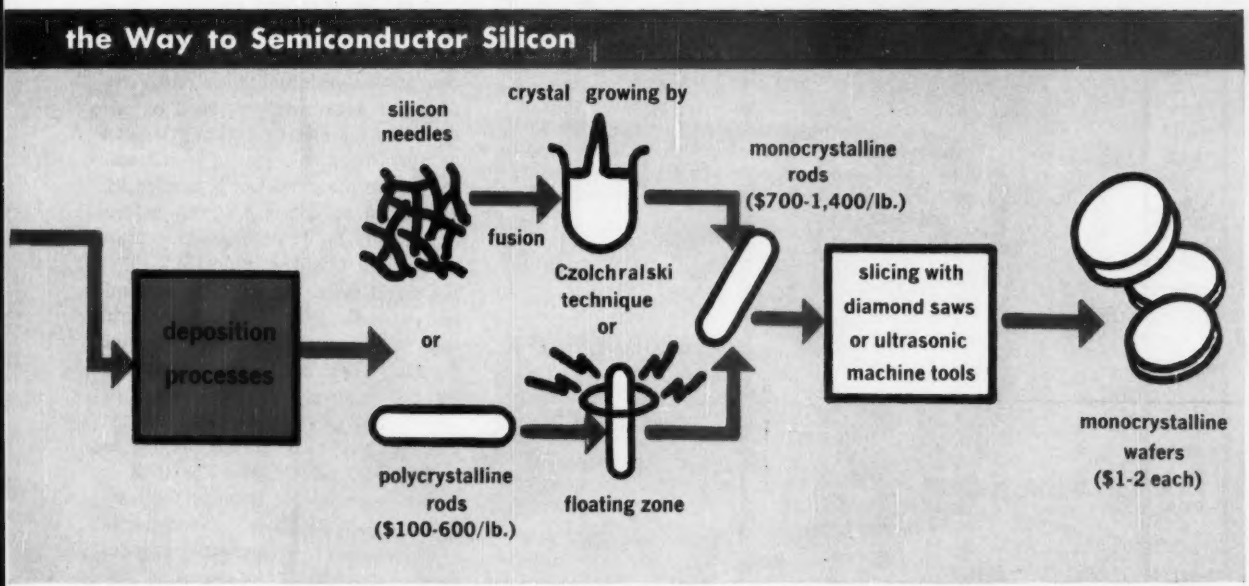
Du Pont's taking this position is easy to understand, considering the background of silicon's fast-growing history. Consumption has doubled almost every year since '56. According to the U.S. Bureau of Mines, consumption was 45,000 lbs. (worth $14.8 million) in '58. It leaped to 80,000 lbs. (estimated at $26 million) in '59 and will be an estimated 140,000 lbs. (about $46 million) in '60. Semiconductor products made from this silicon were valued at $117 million in '58, an estimated $200 million in '59, and an expected $350 million in '60.

As might be expected, markets such as these have attracted a host of companies. The original five silicon makers (Du Pont, Grace, Foote Minerals, Merck, and Texas Instruments) were joined by six new producers. Consequently, at the beginning of this year 11 companies were producing high-purity silicon. Now the stepped up competition has convinced Foote Minerals and Eagle-Picher to get out.

Chemical vs. Physical Purification: Eagle-Picher's decision to drop out of the race illustrates the hot spot in silicon's highly technical manufacturing process: chemical purification. Eagle-Picher's main product, germanium for semiconductors, is a sister element to silicon. It falls in the same series on the periodic table of the elements. Like silicon, it is "doped" with impurities to make rectifiers and transistors. And it is purified by some of the same techniques. But silicon is in many cases superior, since it retains its electronic properties at higher temperatures (480 F, compared with 170 F) and is mandatory wherever high power loads would heat up rectifiers.

Silicon is much harder to purify than germanium, however, because of one element—boron. Boron is necessary to semiconductors (*see p. 66*), but only in extremely low concentrations, on the order of one part per billion if the semiconductor is to have enough electrical resistance to function as a P-type layer.

Boron can be removed from germanium with fractional crystallization methods such as floating zone refining (*CW, June 18, p. 160*) or the Czochralski technique, in which a seed crystal is dipped into the molten metal and slowly withdrawn, pulling a monocrystalline carrot of pure solid metal after it. But in silicon, the boron distributes itself almost equally between the liquid and solid phases; and though other elements, such as phosphorus, are currently taken out by crystallization methods, boron must be separated by chemical processing.



for Cheaper Hyperpure Silicon

In addition to this, silicon is very reactive when molten, and picks up impurities from any container. The question, therefore, is not so much one of equipment costs or operating costs, but whether the purification technique will work at all.

Pure-silicon processes have concentrated on chemical methods, and many of these processing routes were developed as long ago as '57 (*CW, Sept. 6, '58, p. 76*). The details of each process have remained closely guarded secrets, with some companies avoiding patents to help keep secrecy. Basically, however, companies are choosing one of four routes:

• **Du Pont Process:** This is one of the oldest ways to pure silicon. It was developed by Du Pont during the late years of World War II and currently is used in Du Pont's plant at Brevard. It now seems clear that Du Pont chose the lonely mountain top at Brevard to avoid possible contaminents from boron-containing soils, impurity-transporting traffic, phosphorus-fertilized fields. The process employs silicon tetrachloride as an intermediate in the purification step, and produces bulk pure-silicon product in the form of needles or polycrystalline ingots.

Essentially the system consists of three steps. Silicon tetrachloride is produced by packing silicon carbide around a resistor in a quartz tube and passing chlorine through it as the resistor is heated by electricity. The silicon tetrachloride is then purified by distillation in quartz columns, after which it is reduced back to silicon by specially purified zinc in a quartz reaction chamber. The zinc is vaporized and heated to 1700 F, and the tetrachloride vaporized and heated to 1200 F. The reaction chamber is maintained at about 1700 F.

Silicon is deposited in the reactor as crystal needles, while the reactor gases pass into a collection chamber, where the zinc and zinc chloride are collected, and to a condenser, which recovers unreacted silicon tetrachloride.

After removal from the reactor, the silicon is hand-sorted, crushed, and digested with hot hydrochloric acid. The resulting pure silicon is filtered, washed and dried. The needles are then formed into polycrystalline ingots or fused in a quartz crucible for production of monocrystalline by the Czochralski technique.

• **The Iodide Process:** Since Foote Minerals, the only declared user of this technique, has dropped pure-silicon production, this route is probably not currently used in the U.S. Its lack of popularity is probably due to its low stochiometric yield: about 19 lbs. of intermediate product required for each pound of silicon.

The process has been exhaustively studied, however, and several laboratory variations developed. Basically it consists of a thermal decomposition of silicon tetraiodide at about 1000 F under vacuum, depositing solid silicon on tantalum wire or silicon rods, while iodine vapor is carried off to be condensed. Most emphasis has been on purification of the silicon tetrachloride—by distillation in quartz columns, zone refining and recrystallization. The silicon tetraiodide is formed by reacting commercially pure silicon vapor with iodine vapor at about 1500 F.

• **Hydrogen Reduction:** Reduction of silicon tetrachloride with hydrogen is the most popular of the pure-silicon processes currently employed. Variations of it are known as the Siemens and Halske or the van Arkel process. Texas Instruments, Merck, Sylvania Electric Products, Monsanto, and possibly Allegheny Electronics are using various forms of this process; and Eagle-Picher used it before it dropped pure-silicon production.

Two intermediate products are employed: silicon tetrachloride, or silico-

What Is a Semiconductor? Rectifier? Transistor?



SEMICONDUCTOR

Silicon's chemical properties resemble those of carbon, germanium and tin. Each atom is surrounded by four outer electrons. Within a silicon crystal, pairs of atoms bind themselves together, surrounded by a stable envelope of eight electrons.



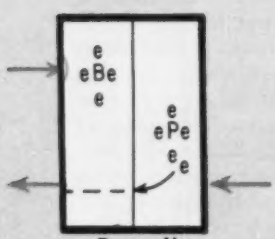
P
SEMICONDUCTOR

If an atom of an element (such as boron) surrounded by three electrons is put into the silicon crystal, it tries to steal another electron from one of the pairs, thus sets up an unbalance called "P type." This is one type of a semiconductor.



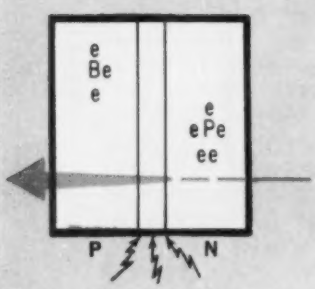
N
SEMICONDUCTOR

If an atom of an element (e.g., phosphorus) is put into the silicon crystal, it tries to give off the extra electron, thus sets up an unbalance called "N type." This also is a semiconductor.



RECTIFIER

When N-type and P-type semiconductor wafers are fused, they form a P-N junction. If a negative voltage is applied to the P side, the boron atoms are attracted away from the junction and the wafer resists flow. But if the same negative voltage is applied to the N side, it pushes electrons across the junction, and the current flows. This is a diode or rectifier.



Third Voltage
TRANSISTOR

If wafers are assembled in three layers as P-N-P or N-P-N, the unit acts as a triode vacuum tube: a weak voltage applied to the middle wafer increases the power of a current flowing across the whole unit. This is a transistor.

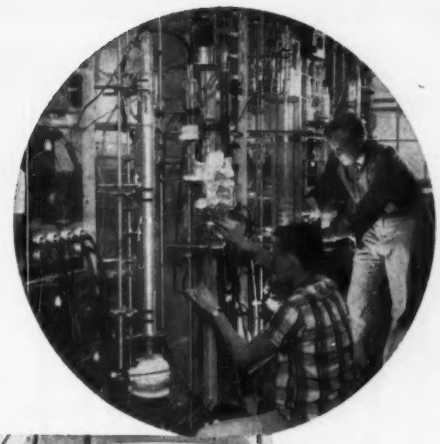
chloroform (silicon tetrachloride with one of the chlorines replaced by a hydrogen). Although silicochloroform can be produced by first making silicon tetrachloride and then partly reducing it with hydrogen, most is produced by the direct reaction of silicon with hydrogen chloride. In both cases, the intermediate product is purified by distillation in quartz columns before it is finally reduced to produce pure silicon and hydrogen chloride.

Critical to this process is the method of deposition. Solid polycrystalline rods are the most desirable form of product. These can be further purified by the relatively simple method of zone refining, whereas bulk deposits of needles must be further treated as in the Du Pont process. The trick is to find a method of bringing the mixture of hydrogen and silicon tetrachloride (or silichloroform) vapors up to the reacting temperature at just the point where pure molten silicon is deposited.

In the Siemens and Halske process this is done by reacting a mixture of hydrogen and silichloroform on a silicon rod heated to about 1800 F by an electric arc. Two silicon electrodes are set in a water-cooled quartz chamber; an electric arc is thrown between the two rods; and the silicochloroform reduced in the arc, depositing pure molten silicon. The rods are slowly withdrawn from the reaction chamber as the silicon builds up and solidifies. These rods are ready for floating-zone refining, and one version of the process has the zone refiner built onto the reactor.

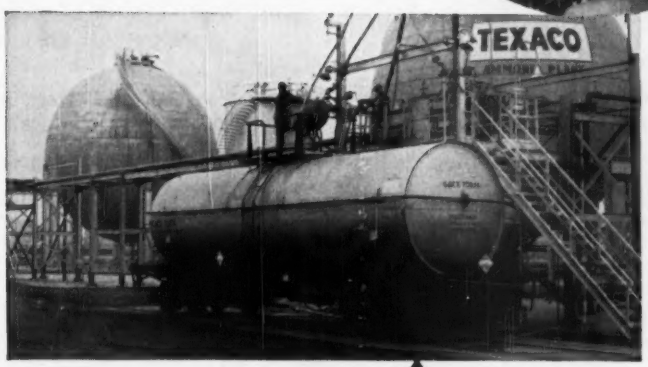
In comparison to this, van Arkel is known for various techniques of depositing silicon tetrachloride and silicon tetraiodide on heated tungsten filaments.

• **The Silane Process:** The only U.S. company known to be currently using this process is Du Pont, at Newport. Although Du Pont says it has made many modifications, the conventional starting point was the reaction of silicon tetrachloride with lithium aluminum hydride. Result: silane (a silicon-hydrogen compound structurally resembling methane) along with lithium chloride and aluminum chloride by-product. This reaction has a double advantage: silane is a gas at ordinary conditions and is easily purified; and boron impurities contained in the feed materials are converted



QUALITY

Texaco ammonia consistently meets your process requirements as to ingredient quality.



AVAILABILITY

Texaco's strategically-located Lockport (Ill.) facility ensures immediate delivery of ammonia in tank cars or trucks.



SERVICE

Texaco's wide range of technical services can help you break a production bottleneck or develop a new product.

Texaco formula for a **BALANCED** industrial chemical process

This Texaco formula can help you balance all the factors affecting your operation, no matter how you weigh them. Its ingredients? They're shown above: Texaco quality, availability, and service.

But weigh the advantage of this service yourself. Write for details—and our free 40-page manual on ammonia—to Texaco Inc., *Petrochemical Sales Division,* 332 South Michigan Ave., Chicago 4, Ill., or 135 East 42nd Street, New York 17, N. Y.

Tune In: Texaco Huntley-Brinkley Report, Mon. Through Fri.-NBC-TV

TEXACO
PETROCHEMICALS

AQUA AMMONIA, ANHYDROUS AMMONIA, NITROGEN SOLUTIONS, DIISOBUTYLENE, ORDORLESS MINERAL SPIRITS, NAPHTHENIC ACID, PROPYLENE TETRAMER AND RUST INHIBITORS

A LEADER IN BIOCHEMICAL RESEARCH

attention: PRODUCT DEVELOPMENT DIRECTOR √
PURCHASING DIRECTOR √
RESEARCH DIRECTOR √
SALES DIRECTOR √

offers over 60 regular items
to the pharmaceutical...cosmetic...dairy
...and chemical industries...including—
ENZYMES • ANTIOXIDANTS • HORMONES
FINE CHEMICALS • GLANDULARS

plus 20 items for experimental purposes,
such as—ANIMAL BLOOD FRACTIONS,
ORGANIC CHEMICALS, BIOCHEMICALS,
INCLUDING SPECIAL ENZYMES

For more information, contact our technical representatives. Call WElls 2-6771 in Kankakee, Illinois. Or write to:

Bio-Chemical Dept.
ARMOUR PHARMACEUTICAL COMPANY
Kankakee, Illinois

FOR GAS OR LIQUID PURIFICATION...
Try the new
"COLUMBIA" NXC
TRADE-MARK
6/8 MESH ACTIVATED CARBON

UNIFORM PELLETS
EXCELLENT ACTIVITY
SUPERB HARDNESS

"Columbia" and "Union Carbide" are registered trade-marks for products of
NATIONAL CARBON COMPANY
UNION CARBIDE
Division of Union Carbide Corporation
1300 Lakeside Avenue, Cleveland 14, Ohio

PRODUCERS OF PURE SILICON

Allegheny Electronic Chemicals, Bradford, Pa.

E. I. du Pont de Nemours & Co., Brevard, N. C.; Newport, Del.

International Metalloids, Inc. (owned by W. R. Grace), Toa Alta, Puerto Rico

Kemet Co. (owned by Union Carbide), Cleveland

Merck & Co., Danville, Pa.

Monsanto Chemical Co., St. Charles, Mo.

Sylvania Electric Products, Inc., Towanda, Pa.

Texas Instruments, Inc., Houston

Trancoa Chemical Co., Reading, Mass.

into nonvolatile lithium borohydride. In the final step, the silane is decomposed and the silicon deposited onto silicon rods, which are heated to about 1100 F by an electric current. Further details have not been revealed.

A possible fifth route is International Metalloids Corp.'s Grace-Pechiney process. All that is known about this is that it employs neither silicon tetraiodide, silicon tetrachloride, nor silane, and that it produces bulk needles, polycrystalline ingots, and rods. It is typical of those processes whose developers have chosen to protect their advantage with secrecy and have never made patent applications.

Whose Business? Since much of the early work on semiconductors for transistors and current rectifiers was done by electronics manufacturers such as Bell Telephone, IBM, General Electric and Westinghouse, the current semiconductor industry has a border area where it is not clear just when the chemical industries let go of the work and the component manufacturers take it up. Many pure-silicon producers, however, share the opinion expressed by Thayer Rudd, plant manager of Allegheny Electronic Chemicals Co. Says Rudd: "Our philosophy is to supply silicon semiconductors in such a variety of forms that the electronics manufacturer can limit his job to one of assembly, just as they do in the vacuum tube business."

To back this up, Allegheny operates

Propylene glycol U.S.P.



FOR FOOD PROCESSING...



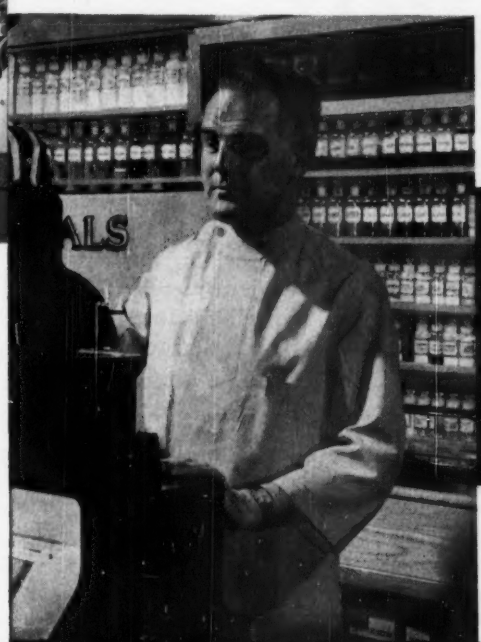
COSMETICS...

. . . is available from Celanese in commercial quantities. Here is a source you can depend on for consistency . . . odor-free quality and blandness . . . excellent solvent power and hygroscopic characteristics . . . outstanding emulsifying and wetting action.

For technical data, write:
Celanese Chemical Company, a Division of Celanese Corporation of America, Dept. 752-G, 180 Madison Ave., New York 16, N. Y.

Celanese ®

Canadian Affiliate: Canadian Chemical Company Limited, Montreal, Toronto, Vancouver.
Export Sales: Amcel Co., Inc., and Pan Amcel Co., Inc., 180 Madison Avenue, New York 16.



PHARMACEUTICALS

Celanese
CHEMICALS



. . . And we've been at it ever since, providing our customers an uninterrupted supply of 99+% pure Copper Sulfate through wars, through shortages, throughout the years. If Copper Sulfate is important to your operation, may we suggest Tennessee Corporation?

For complete list of our products see our inserts in Chemical Week Buyers' Guide, Pages 173-176 or Chemical Materials Catalog, Pages 551-554.

For further information, phone, write or wire:

TENNESSEE CORPORATION
612-629 Grant Building, Atlanta 3, Georgia

a plant using an undisclosed technique (licensed from Aries Associates) recovering silicon from purified silicon from purified silicon tetrachloride. Physical purification is done both by the Czochralski technique in electrical resistance or radio frequency furnaces, and by floating-zone machines. Monocrystalline wafers are cut in abrasive slicing machines. The bulk of its crystals are formed with the required amount of P-type or N-type compounds in them, so that subsequent doping is not required.

When the dust clears, this may well be the standard practice in silicon making.

Oxygen-Steel Assist

The steel industry is watching a new 110-ton oxygen steelmaking furnace, just started up by the Societe Lorraine de Laminage Continu at Seremange, France. The furnace, developed by Stora Kopparsberg Bergslags A/B (Sweden) and handled in the U.S. by Dravo Corporation (Pittsburgh, Pa.) is first of its kind. It uses an inclined, variable-speed rotating hearth to refine pig iron to steel.

First results are excellent. It has already produced what is believed to be the largest single heat (122 tons) ever produced in an oxygen converter.

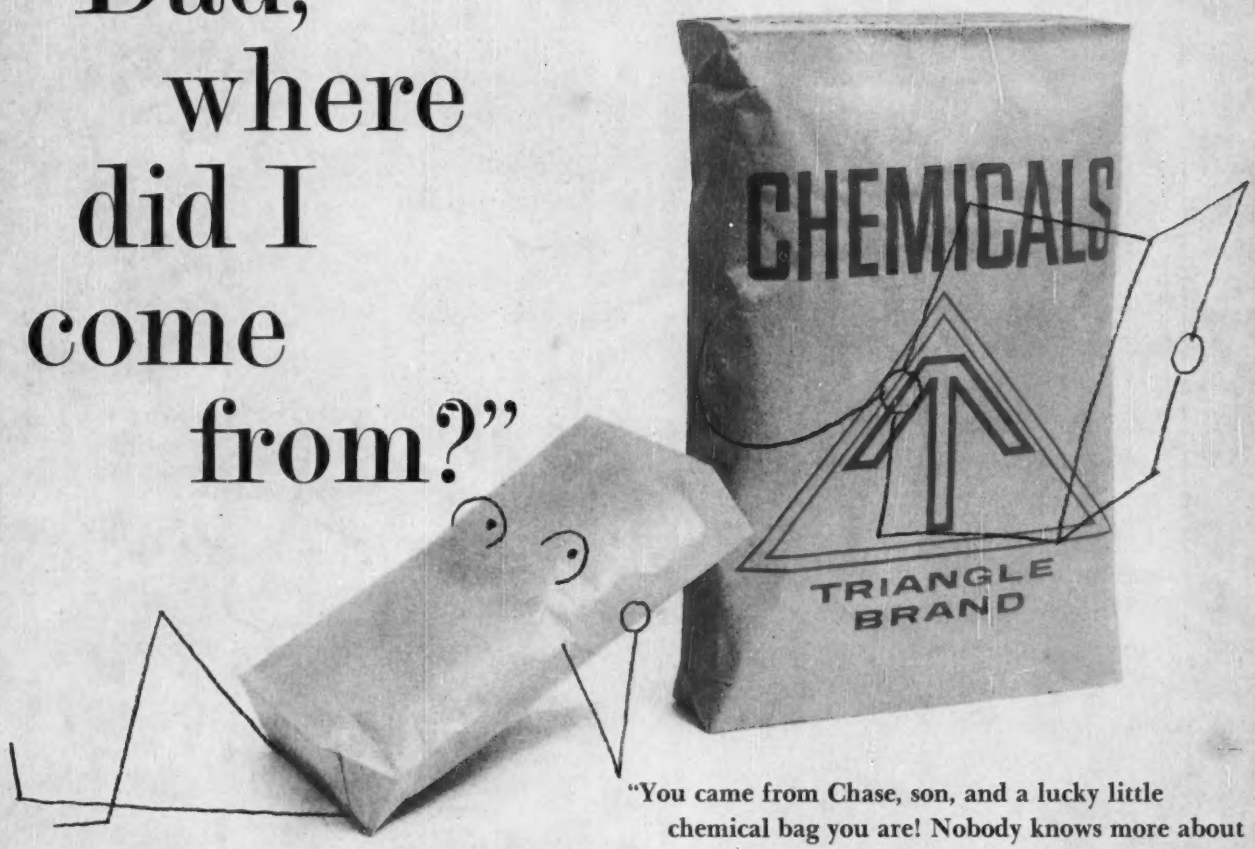
Removal of phosphorus and sulfur from the pig iron feed is even better than expected. Oxygen flow rate to the unit was about 5,000 cu.ft./minute. And oxygen consumption amounts to about 1,950 cu.ft./ton of ingot product when the feed is a mixture of molten iron and solid scrap.

Pulper's Rubber Role

Engineers at Esso Research laboratories in Baton Rouge have borrowed from the paper industry to solve some rubber processing problems. The techniques have been put to use making butyl latex and a new chlorinated butyl in the company's semicommercial pilot plant.

The two key problems were (1) shredding raw butyl and (2) transferring shredded butyl, as well as viscuous solutions of latex and chlorobutyl. The shredding is done at the start of the process when solid butyl is being dissolved in a hydrocarbon solvent. Originally, this was done by putting 50-lb. slabs into rotating con-

"Dad, where did I come from?"



"You came from Chase, son, and a lucky little chemical bag you are! Nobody knows more about bag materials and bagmaking than Chase. Chase makes its chemical bags of paper, textile, and polyethylene, or combinations of these materials. Every material is tested to assure maximum strength, minimum bulk, superlative moisture protection and lowest cost. And Chase engineers are continually solving packaging problems for the chemical industry. That's why you can now number among your relations a new, superstrong Chase Bag that permits safe storage of hygroscopic chemicals, even outdoors, for months... in any weather. Doesn't it all make you just glow with pride, son?"

Feel an idea coming on? Call your Chase Man. Or a letter direct to us will bring complete facts about economical Chase packaging for any chemical product—even some semi-liquids.

CHASE BAG COMPANY

355 Lexington Avenue - New York 17, N.Y.
32 Plants and Sales Offices Coast to Coast

MULTIWALLS • HEAVY-DUTY POLYETHYLENE • LAMINATED AND TEXTILE BAGS AND OTHER PACKAGING MATERIALS

SPEED filtration & processing

FOR FASTER, MORE PRODUCTIVE filtration of fruit juices and foods... this virtually 100% pure cellulose offers important advantages as a filter medium in processing applications.

SOLKA-FLOC is easy and economical to use . . . only small quantities are required to "trap" the most minute suspended solids and produce maximum yields. Its fibrous structure effectively retains pulp particles and at the same time greatly increases the rapid, steady flow of juice. And the pomaces are exceptionally low in moisture content. SOLKA-FLOC is so soft and resilient—it is completely non-abrasive to extraction equipment. Since it is non-contaminating, filter cakes may be used as by-products.

Whether your extraction or filtration problem is in food processing, beverages, pharmaceuticals, chemicals, textiles, chromatography, or any other field—get the facts about SOLKA-FLOC. Write Dept.CF7, at our Boston Office.

SOLKA-FLOC®



Another Quality Product Of
BROWN COMPANY
150 Causeway St., Boston 14, Mass., Dept. CF-7
Please send me SOLKA Fact Folder.
NAME_____ TITLE_____
COMPANY_____
ADDRESS_____ CITY_____ STATE_____

tainers and holding the slabs in the solvent until they were dissolved. This proved too slow for economical operation. So Esso turned to the paper industry and bought a wood-hog shredding machine—a steel cylinder fitted with cutting blades and rotating inside a case. This machine, standard equipment for chipping logs, doubled the solution rate from 1,500 to 3,000 gal./day.

Also, the rubber experimenters found the latex intermediate product couldn't be moved with anything but a Moyno pump—essentially a spiral screw rotating inside a metal casing. This pump is also standard equipment in the wood pulp industries for pumping slurries of shredded wood chips.

Using this equipment, the process steps are as follows: 50-lb. blocks of butyl (14 x 14 x 10 inches) are fed into the wood-hog hopper by a conveyor belt. The wood-hog chops them into rice-sized bits and delivers these into the suction of an air blower beneath the wood-hog. The blower then blows the chips into the agitated solutizer tank, common to both the latex and chloro processes, where they are dissolved. A thick solution, resembling rubber cement, is then picked up from the solutizer and pumped into the processing sequences by the Moyno pump.

Chemical Lumber

Two processes for making artificial boards through the chemical treatment of waste wood products are making their debuts this week. Emerite Corp. (Jackson, Miss.) has appointed Girdler Construction Corp. its agent to engineer and construct plants for a composition board known as Chemwood. And U. S. Plywood Corp. has joined with Sheetwood Products Co. (Seattle, Wash.) to build a semicommercial pilot plant making a new (so far not tradenamed) type of fiber board.

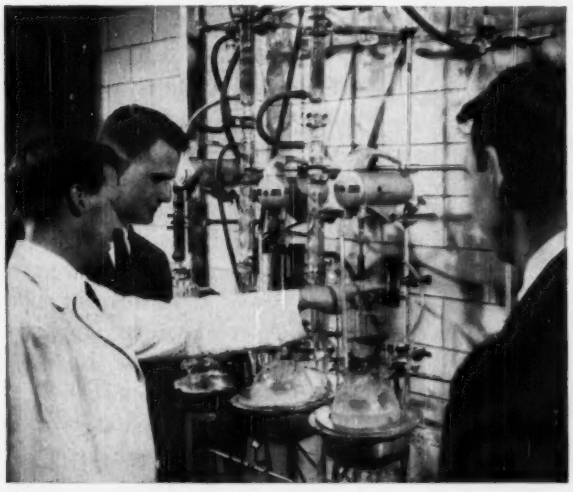
The Chemwood process converts any lignocellulose material, such as wood chips or sugar cane bagasse, into a stable plastic-like material. The fiber board process will use waste sulfite liquor, oversupply of which is currently plaguing Northwest paper producers, as a binder for sawdust and wood chips from saw mills and plywood plants.



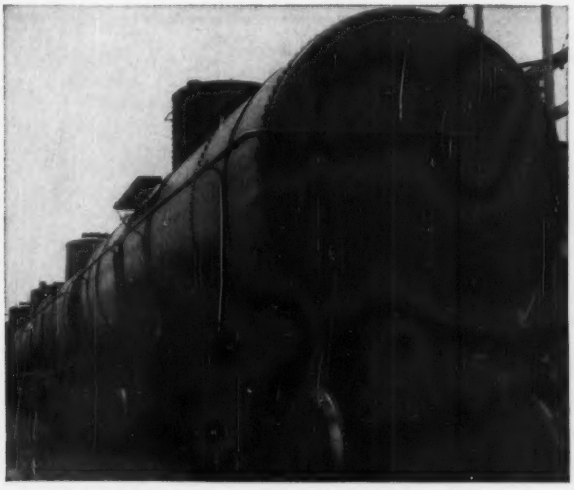
ENJAY OLEFINS—Enjay markets tetrapropylene, tripropylene and nonene. These chemicals fulfill the most rigid requirements as raw materials for anionic and nonionic detergents. Uniform purity and high quality contribute to the modern detergent's ability to get hard-to-wash surfaces cleaner.



TRIDECYL ALCOHOL—Water soluble nonionic surface active agents formed by the reaction of tridecyl alcohol with ethylene oxide are extremely well suited for use as household detergents. Surfactants made with tridecyl alcohol help increase penetrating power and loosen dirt.



TECHNICAL ASSISTANCE—At the Enjay laboratories, expert technical assistance and the latest testing facilities are available. Here, Enjay technical personnel can help you develop new products and improve existing ones.



QUICK SHIPMENTS—Shipments are made from conveniently located plant and storage facilities. Surfactant manufacturers are assured of prompt delivery and high uniform product quality when they order from Enjay.

HOW ENJAY SERVES...the surfactants industry

Enjay offers the surfactants industry the following high quality materials for all types of detergents, wetting agents, emulsifiers, sanitizers and foam control agents: Tetrapropylene • Tripropylene • Nonene • Tridecyl Alcohol • Decyl Alcohol • Isooctyl Alcohol • Isopropyl Alcohol • Benzene. For technical assistance or to order Enjay chemicals contact the nearest Enjay office.

HOME OFFICE: 15 West 51st Street, New York 19, New York. OTHER OFFICES: Akron • Boston • Charlotte • Chicago • Detroit • Houston • Los Angeles • New Orleans • Tulsa

EXCITING NEW PRODUCTS THROUGH PETRO-CHEMISTRY

ENJAY CHEMICAL COMPANY

A DIVISION OF HUMBLE OIL & REFINING COMPANY

ENJAY
PETROCHEMICALS



Jobs Open: *for Latex Paint*

It's easy to reach the right markets when you custom-tailor your latex formulations with CARBIDE's chemicals.

Take 2-ethylhexyl acrylate, for example. Low concentrations copolymerized with vinyl acetate, vinyl chloride, or styrene give excellent internally plasticized resins. 2-Ethylhexyl acrylate also improves color retention and resistance to water and alkali.

When it comes to thickening power, CELLOSIZE Hydroxyethyl Cellulose QP-4400 brings you instant color development in hot let-downs. It can be dry-blended into the original grind, eliminating the time-consuming thickener dissolving step. And, CARBIDE's complete line of coalescing aids—butyl CELLOSOLVE acetate, butyl CARBITOL acetate, hexylene glycol, CARBITOL solvent, and CARBITOL acetate—improves film coalescence, especially at low temperatures. CARBIDE also supplies defoamers — polypropylene glycol 1025 and 2-ethylhexanol . . . and TERGITOL nonionics for complete pigment dispersion.

Ask your nearest CARBIDE Technical Representative to show you how you can brighten your profit picture in latex paints by meeting all your organic chemical needs from a single money-saving source of supply. Or, write for a copy of "Chemicals for Resin Emulsions," Department L, Union Carbide Chemicals Company, Division of Union Carbide Corporation, 270 Park Avenue, New York 17, New York.

CARBITOL, CELLOSIZE, CELLOSOLVE, TERGITOL, and UNION CARBIDE are registered trade marks.

UNION CARBIDE CHEMICALS COMPANY

UNION CARBIDE

Technology
Newsletter

CHEMICAL WEEK
July 16, 1960

Polymerization of acetylene and acetylenic hydrocarbons is the subject of a new British patent (826,674) issued to Montecatini. The firm won't elaborate on its research in this field, but the patent describes the polymers as having "high" molecular weights (e.g., 1,000) and having linear sections of carbon atom chains containing side chains. Typical catalysts are the halides or oxyhalides of metals such as titanium, iron, vanadium or molybdenum, or organo-metallic compounds such as alkyl aluminum.

Trade sources feel that abundant methylacetylene, obtained as a by-product in ethylene and propylene production (for polyolefins), might be triggering new utilization research. Another recent British patent (831,350), to Badische Anilin, covers preparation of cyclopolyolefins (e.g., cyclo-octatetraene) by polymerizing acetylene or its derivatives at high temperature using a nickel catalyst and a solvent. Some American firms have done research on acetylene polymerization, apparently without commercial success.

•

First "true" amplification of light is claimed for a device developed by Hughes Aircraft Co. (Culver City, Calif.). Called a "laser" (from Light Amplification by Stimulated Emission of Radiation), the unit's key part is a synthetic ruby rod (aluminum oxide containing 0.05% chromium). Eventually there may be CPI uses for the device, says Theodore Maiman, who headed the project leading to its invention. But applications data so far is scanty. Laser beams might be concentrated to a diameter of a few 10 millionths of an inch, generating intense local heat. Says Maiman, "Surface areas might be modified and chemical or metallurgical changes induced."

General Electric, Westinghouse, Bell Telephone Laboratories, and other companies have worked on light amplification. In Dec. '54, GE displayed experimental screens, made of a special phosphor to which an electric field is applied, that gave off 10 times as much light as that projected on them. Bell Labs has also been working with synthetic ruby light amplifiers, although it has not disclosed one that operates successfully.

•

TVA engineers have found a novel use for flash evaporators such as are used to make drinking water from sea water: they are installing two as de-aerators in the Paradise, Ky., steam plant. The Westinghouse evaporators cost a total of $265,000, will save an estimated $1 million. The new units will strip out undesirable gases at very low pressure thereby boosting turbine efficiency.

•

Details of a new saline-water conversion process are out this week. Koppers Co. (Pittsburgh, Pa.) has received U.S. Patent 2,904,511 and has

applied for other patents on a method that involves bubbling propane or other hydrocarbon gases into sea water, forming plate-like crystals (e.g., $C_3H_8 \cdot 17\ H_2O$) with the water. Such hydrocarbon hydrates form at a temperature higher than the freezing point of water. Salt is left in the brine. The crystals are separated, washed and converted into gas (which can be re-used) and pure water by reducing the pressure or raising the temperature of the system slightly.

Koppers says the total energy in crystal formation is less than with either conventional freezing or distillation methods of sea-water conversion, so the new method may prove less expensive. The firm has been working with the Office of Saline Water of the Dept. of Interior and with Syracuse University, which is screening various gases for the process. Development has been on a bench-scale so far. But if the process proves practicable, Koppers plans further work "on a pilot-plant scale."

Another process, using algae, has been dropped from consideration after preliminary experiments (costing $10,000) by Resources Research Co. (Washington). The idea was to grow algae in a basin of sea water. The algae would absorb salt, then be removed to a second basin, where light would not be present, causing the algae's metabolism to be reversed and salt to be excreted. Contrary to expectations, the algae kept on absorbing salt. Also, algae nutrients had to be carefully controlled, and the organisms were subject to disease.

•

A new, quick, cheap way to eliminate rust and red color from domestic water systems has been worked out at Michigan State University (East Lansing) by engineer Robert McCauley. He adds metaphosphate, lime, soda ash, caustic soda and calcium chloride to the water (in concentrations depending on the composition of the water to be treated), building up a thin, hard layer of calcium carbonate on the pipe walls. Then normal water is returned to the pipes. McCauley, associate professor of civil engineering, coated a 1,200-ft.-long, 6-in. iron pipe in two hours in a recent field test. Corrosion and rusty water is a problem in an estimated 25% of the nation's 18,000 water systems.

•

The question of whether giant piles of sand tailings are unstable and represent a physical hazard is posing a threat to the future of Great Canadian Oil Sands Ltd.'s $99.34-million project to extract oil from the vast oil-sand reserves along Canada's Athabasca River. The project has been challenged before the Alberta Conservation Board by a four-company team, Imperial Oil, Ltd., Richfield Oil Corp., Cities Service Athabasca, Inc., and Royalite Oil Co., Ltd., which holds a neighboring lease (*CW Technology Newsletter, Jan. 23*).

The four-company group charges that Great Canadian's tail sands, which will be deposited at the rate of 30,000 cu.yds./day, could suddenly become unstable and flow as a heavy fluid mass. Great Canadian replies that the fluid mechanics of the operation have been taken into consideration and that it has a safe program.



IN YOUR IMPROVED PRODUCTS . . .

Jefferson Ethanolamines attend a baby shower

Anticipating time . . . boy or girl? One thing's for sure. The child's future will be more comfortable and healthy, thanks to your practical applications for Jefferson Ethanolamines. Surrounding this soon-to-be mother are cosmetics and toilet goods, wool blankets and baby clothing, rubber pants and gloves, and behind scenes . . . sweetened natural gas to cook food and dry clothes.

Versatile ethanolamines are hygroscopic, and miscible with water, most alcohols and polyols. There's hardly an industry where there isn't some profitable application for these multifunctional chemicals. For all your ethanolamine requirements — mono-, di-, or tri- (both regular and 99% grades), look to Jefferson for prompt shipments in any quantity . . . pioneer of ethanolamine shipments by barge. Jefferson Chemical Company, Inc., 1121 Walker Avenue, P. O. Box 303, Houston 1, Texas.

Ethylene and Propylene Oxides, Glycols, Dichlorides, Carbonates
SURFONIC® Surface-Active Agents • Ethanolamines • Morpholine
N-Alkyl Morpholines • Polyethylene and Polypropylene Glycols
Piperazine • Piperazine Salts • Nonyl Phenol • Caustic Soda

HOUSTON • NEW YORK • CHICAGO • CLEVELAND • CHARLOTTE • LOS ANGELES

JEFFERSON CHEMICALS

013

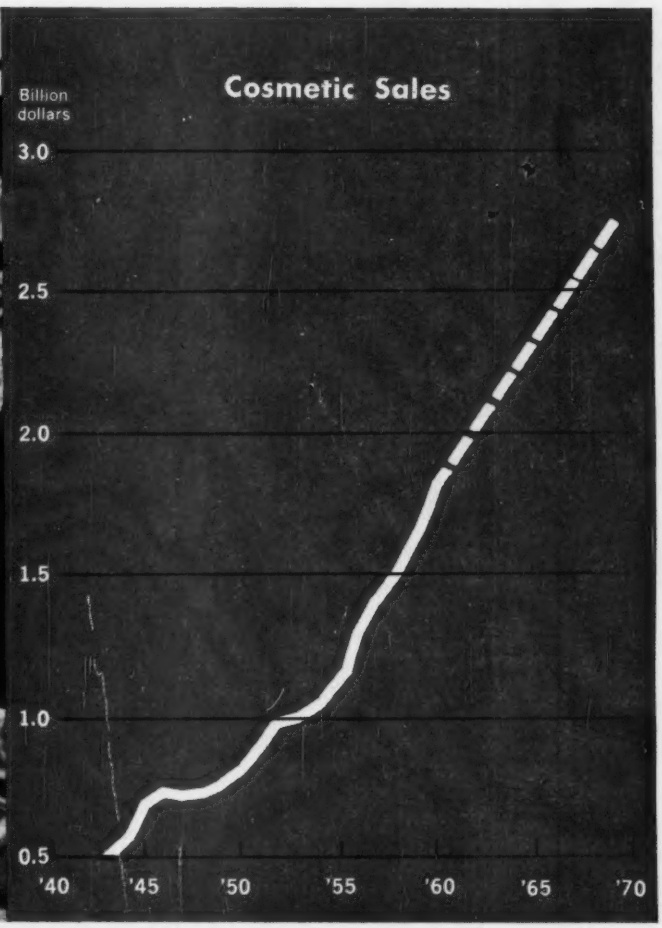
Arizona, world's largest producer of tall oil chemicals, has completed its giant new Springfield, La. plant. It will soon be in full production. The new facility gives Arizona an even larger fractionating capacity... assures you of continuous supplies of the finest tall oil products—better, faster service. Arizona research is developing tall oil products tailored to the particular needs of your industry... products to bring your operation greater efficiency and economy. This new plant is another step in Arizona's sustained effort to provide you with the best in tall oil products and service.



ARIZONA CHEMICAL COMPANY, 30 ROCKEFELLER PLAZA, NEW YORK 20, N. Y.

ACINTOL® Products: ACINTOL D and ACINTOL DLR Special Distilled Tall Oil • ACINTOL FA1, FA1 Special and FA2 Tall Oil Fatty Acids • ACINTOL R Tall Oil Rosin • ACINTOL P Tall Oil Pitch • ACINTENE® Terpenes





Rising Sales Curve Mirrors Beauty Boom

Makers of colorants, aromatics, waxes, wetting agents, emulsifiers, bacteriostats, surfactants and other specialty chemicals used in toiletries recently were given a preview of how their customers view the long-range future. Doing some crystal-balling at their annual convention last week toiletry makers forecast for '70:

- Supermarkets featuring cosmetic demonstrators.
- Department stores combining their beauty salons with cosmetic departments.
- Special lines of products—such as geriatric toiletries—aimed at particular age groups.
- Vending-machine sales of higher-priced cosmetics.

Perhaps the standout forecast: consumer buying of toiletry products by '70 will show a robust 65% gain—to $2.7 billion—over sales volume in '59, when the cosmetic cash register rang up $1.7 billion in retail sales.

Billion Dollars, Plus: Occasion for this look ahead was last week's annual convention of the Toilet Goods Assn. at Poland Spring, Me. The convention has grown in importance along with industry sales, which have risen from $450 million in '40 to $1.7 billion last year.

In the last few years beauty products have diversified greatly, not only in type but also in sales outlets. In '50, for example, 37% of all toiletries were retailed in drugstores, only 6% in grocery stores. Today supermarket sales account for 23% of all beauty items sold, while drugstores' share of sales has dropped to 27%.

Door-to-door selling has also risen from 14% to 21% of the market in the past decade. Most of this gain has been at the expense of department, variety and drug stores.

The Nielsen Co.'s (Chicago) market research figures indicate that food stores will about double their toiletries sales during the next 10 years, with drugstore sales likely to grow only about 50%, as will those of all other outlets.

Other predictions for the toiletries industry from Nielsen: no increase in the number of retail outlets selling toiletries, but individual stores are likely to become larger; and — because of growth in population groups



Demonstration selling will be big factor in beauty merchandising in '60s.

such as the teenagers and people over 60—new brands of cosmetics which might be called "outdoor," "teenage," or "geriatric."

Toiletries in Supermarkets: A dominant trend in the merchandising of toiletries in the next 10 years will lead to a larger share of sales in food stores. Reason: supermarkets recognize that toiletries items are profitmakers. (Although health and beauty products account for only 2½% of total store sales, they bring in the largest proportionate profit return.) And food stores are the favored place for "one stop" shopping, a growing habit of U.S. buyers.

In an effort to cash in further on the booming beauty business, supermarkets have already been making merchandising innovations for these products. For example, many supermarkets are displaying hand lotions in the detergent department, baby powder in the baby food section, shaving lotion at the cigarette counter.

And the supermarkets are due to make more changes in their stores in the future. There's talk of their using cosmetic demonstrators to introduce self-service cosmetic departments. Giant stores may have separate cosmetic sections with cosmeticians on duty full time.

In large part the supermarkets will be depending on the toiletries maker to present his product with a package that will sell itself just as these markets have forced "self-sell" packages for detergents, foods. There are already indications of how sales of some cosmetic items can bloom in supermarkets: lipsticks sales there rose 102% last year; nail polish, 40%.

The Personal Touch: Another important outlet for toiletries products in the next decade will be door-to-door selling. This type of selling has been rapidly achieving a highly respectable status in the cosmetic field. Today, in fact, the biggest cosmetic company of all—Avon Products, Inc. (New York)—sells entirely by this method. The company has 20% of the door-to-door market, did $141.9 million in sales last year. In '50, its sales were $31 million.

In the next few years, the 30 or so firms distributing this way will be trying to create a more dignified public image for themselves. They hope to replace the designation "house-to-house" with "personal service in the home." They'll be stressing the educational aspects of direct selling and the advantages of being able to demonstrate cosmetic products. (Eye makeup, for example, is one product that benefits by demonstration.)

New Look for Dime Stores: Variety stores, representing an estimated $140-million outlet for toiletries, will be making a big push to regain sales lost to supermarkets and door-to-door sellers. Some changes have already been made: in recent years the variety stores have been pushing a "trading up" policy by leaning to higher-priced products, larger sizes, more advertised brands, more top name lines, and to treatment products.

While this has been going on, the dime stores have been careful to retain their lower-priced brands.

The variety stores figure that by '70 their stores will be the dominant retail outlets in most small and medium-size cities and in shopping centers. Remodeled stores and newly built ones will be geared to self-service and check-out counters exclusively. More brand promotion, advertising, quality, higher-priced products is the direction the variety chains will be traveling.

These chains will seek after-hour sales by installing cosmetic vending machines in "open-all-night" store areas. Other tendencies that are budding now and will become big factors in variety merchandising: credit selling, catalog selling and home delivery.

The Elegant Approach: Department stores are also contemplating new methods of selling cosmetics in the '60s. Their stress will be on the individual, personal approach to the customer. In prospect are combination cosmetic counters and beauty salons.

Consultant service will become more common, as will the blending of makeup at the cosmetic counter to suit individual needs. But the stores predict they will carry fewer lines in the future.

Drugstores, consistently losing toiletries business over the past decade, will make their bid to recoup straying sales. In their plans are bigger, more departmentalized and scientifically stocked and arranged stores. An increase in the number of stores is on the horizon. This year, for example, 700 new chain drugstores will open, and an estimated 20% of this additional space will be devoted to toiletries.

TGA's Crystal Ball: The beauty makers, always known for their imaginative merchandising, came up with a few other interesting ideas to try in the '60s. They foresee mobile manicurists who would operate like shoeshine boys; company beauty salons; mother-and-daughter hair colors; overseas airline hostesses giving facials; and new uses for vending machines—e.g., hand lotion and suntan creams dispensed in service stations, baby toiletries in airline terminals.

Much talk in sessions at Poland Spring was devoted to two new classes of cosmetics: those for teens and older people. (One big cosmetic house will shortly introduce a new line of cosmetics especially for young girls.)

And a new type of cosmetic, termed charmaceuticals, may be getting a big play in the next 10 years. Capsules and suppositories will be forms of these new products which will treat, as well as beautify.

The trend toward higher unit prices and more specialized products coupled with shifts in sales outlets (and packaging) could mean handsome profits. But only the toiletry makers fast on their feet will be able to cash in on the opportunities.



These crystals were born lucky

Not for these crystals the birth pangs of chemical synthesis! Theirs was strictly a natural delivery from FMC's pure trona ore resources found in abundance under the Wyoming earth crust. The crystals? Sodium sesquicarbonate. Use? They're calcined to form the purest SODA ASH. FMC soda ash has the inherent purity of a natural crystalline product. That's why FMC, in a new expansion program, is adding 200,000 tons per year to present production of natural soda ash.

FMC's Chlor-Alkali Division is one of the family of FMC Chemical Divisions which include Niagara Chemical, Becco Chemical, Chemicals & Plastics, and Mineral Products Divisions. With its diversity of products and services, FMC serves a broad base of customers in government, agriculture and industry.

Putting Ideas to Work

FOOD MACHINERY AND CHEMICAL CORPORATION

Chemical Divisions

161 East 42nd Street, New York 17, N. Y.

JOB OPPORTUNITIES: Immediate openings exist in the FMC Chemical Divisions for Chemists and Chemical Engineers at all levels of experience. If interested, call or write our technical recruitment manager in New York.

PRODUCTS OF THE FMC CHEMICAL DIVISIONS: BECCO CHEMICAL DIVISION—hydrogen peroxide and peroxygen chemicals; CHEMICALS & PLASTICS DIVISION—DAPON® and OXIRON resins, plasticizers and organic chemicals; CHLOR-ALKALI DIVISION—alkalis, solvents, and chlorinated products; NIAGARA CHEMICAL DIVISION—agricultural chemicals and pesticides; MINERAL PRODUCTS DIVISION—phosphates, barium and magnesium chemicals. Our 34-page brochure describing hundreds of FMC chemical products available on request.

Does Paperwork give You the Willies?



STOP QUIVERING! No need to take an axe to the office typewriters just because we mentioned that nasty word. There's nothing tricky about solving your problem of being overworked and "over-read." We can fix you up in the next paragraph . . . if you'll just remember you're a chemical process management man and stop making like a librarian.

HOW SO? SIMPLE! If you're a regular subscriber to CHEMICAL WEEK, rely more on the magazine to sift that mountain of reports cluttering up your desk. Read it promptly, more intensively and you'll be way ahead in time and knowledge. If you're a casual "pass-along" reader, it'll pay you to get your own personal copy . . . and read it while the news is fresh!

LET CHEMICAL WEEK DO IT . . . collect the important economic and technical data for you . . . report the hot happenings affecting your job specialty . . . give you all the chemical process news and events worth printing . . . *regularly handle your paper work headaches.*

ALL IT TAKES is a few minutes of your time each week . . . and $3.00 for a full year's service, $5.00 for 3 years. If you're a management man (department head or above), you should be reading CHEMICAL WEEK, *every week!* Order now from:

Subscription Manager,

Chemical Week

330 W. 42nd St., New York 36, N. Y.

British Are Coming

Look for stepped up sales efforts in the U.S. by Beecham Group Ltd., British manufacturer of beverages, toiletries and drugs. In the annual report to stockholders, H. G. Lazell, chairman of the group, said Beecham is now actively testing additional product brands in the U.S. Said Lazell, "It is most important that our international proprietary brands should be well established in the United States, which so greatly influences marketing policies for our types of product throughout the world and particularly . . . in the Canadian, Caribbean and Latin-American markets."

At the same time, Lazell disclosed that Beecham's Brylcreem, already the largest selling hairdressing in the world, is now the largest selling hairdressing in the U.S. This he characterized as the only instance of a foreign toilet product achieving the leading position in this very competitive section of the world's most competitive market.

Products that the Beecham group intends to push in the U.S. aren't specified but it's believed that Beecham has its eye on the toothpaste market. The company's annual report, for instance, states that "Macleans toothpaste and Silvikrin range of products [hair shampoos and dressings] are particularly suitable for development overseas."

Beecham Group Ltd. sold $96.6 million worth of its products in Britain during '59-'60, and $43.4 million overseas.

Coal-Chemical Imports

U.S. makers of coal-tar dyes, drugs, flavors, perfume materials and the like are facing heavier competition from abroad. That's the gist of the latest report from the U.S. Tariff Commission.

The government says that general imports of coal-tar chemicals last year amounted to 28.8 million lbs., and were valued at $14 million. This was a gain in value of 32% over '58, when 14.4 million lbs., worth $10.7 million, entered the country. Almost half of the coal-tar chemicals imported in '59 came from West Germany. Other countries exporting sizable quantities to the U.S. include Italy, France and United Kingdom.

Imports of finished coal-tar products totaled 11.3 million lbs. last year. Foreign invoice value came to $21.9 million. In the previous year, some 7.1 million lbs. were imported.

For the third year in a row, medicinals and pharmaceuticals were the most important group of finished products imported. Imports were valued at $10.7 million, 49% of the total.

Second biggest in the finished products category were coal-tar dyes, which rose 22% over '58. Some $7.9 million worth of dyes, accounting for 36% of all finished coal-tar products, entered the U.S. last year. Imports of synthetic organic pigments —toners and lakes—were valued at $401,000, compared with $286,000 in '58.

Import of perfume and flavoring materials surged 42% from '58 to '59. The government reports that $865,000 worth of these materials were supplied from abroad. Principal exporters: Japan, the Netherlands and Canada. The two most important items imported last year were saccharin and vanillin.

PRODUCTS

Two for Textiles: Sandoz, Inc. (61 Van Dam St. N.Y.), is offering two new textile finishing agents: Ceranine PN, a cationic softener for polyacrylonitrile fibers, and Leucophor A, an acid-stable fluorescent whitener for cellulosic fibers. The softener can be applied to polyacrylic fiber products at any stage in their production, is said to give a cashmere-like hand. The whitener, according to Sandoz, surpasses previously available brighteners in yield when used in synthetic resin finishing baths with acid catalysts.

•

Metal-Filled Rubber: Connecticut Hard Rubber Co. (407 East St., New Haven, Conn.) has developed a family of silicone rubbers which contains a high percentage of dispersed metal particles. The material, called Cohrlastic HG., is suggested as a shielding material against high-energy radiation or as an acoustic damping material. It can be processed in the same manner as normal rubber compounds, be formulated as a coating for fabrics.

sleek... trim... and perfectly coordinated!



That's our new 300,000 sq. ft. multiwall bag plant at St. Marys, Ga.

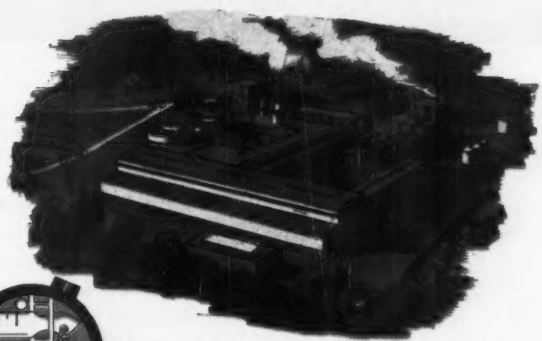


Like the building itself, our equipment is new and the very latest in mechanical efficiency.

This fully integrated plant has every facility for turning out every kind of multiwall bag ... open mouth or valve, sewn or pasted, stepped-end, and our own patented Kraft-lok® valve; also bags with special inserts, sleeves, protective linings or outers, and vapor barriers.

The best in multiwall bags—are Kraft Bags!

... and the best in open mouth bag filling machines is The Kraftpacker, for which we are exclusive sales agents.



Paper Mill at St. Marys, Ga.

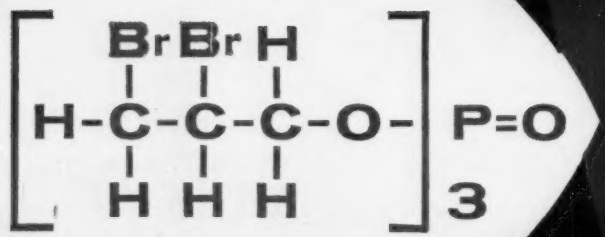
KRAFT BAG CORPORATION
Gilman Paper Company Subsidiary
630 Fifth Avenue, New York 20, N. Y.
Daily News Building, Chicago 6, Ill.

☐ We would like to know more about Kraft Bag Multiwalls.
☐ We would like to know more about The Kraftpacker.

COMPANY NAME_____
ADDRESS_____
CITY_____ ZONE____ STATE_____
PRINCIPAL_____
PRODUCT MFD._____ CW

Firemaster* T23P

Flame retardant for plastics



tris (2,3-dibromopropyl) phosphate

More halogen=more flame retardance. Michigan Chemical's Firemaster* T23P contains a high bromine content of 68.7% with 4.4% phosphorus. This imparts particularly efficient fire retardancy to expandable polystyrene and other styrene products, polyesters, phenolics, acrylic resins, PVC, epoxies and urethane foams. Because of its fundamental superiority, small quantities of Firemaster* T23P may suffice. Its clarity and light color usually preclude any problem of color carryover to end products. Firemaster* T23P is now available commercially in any quantity from pounds to carloads. Write today for technical data, samples, and prices.

*Reg. U.S. Pat. Off.

For complete listing of Michigan Chemical products, see your copy of Chemical Materials Catalog

MICHIGAN CHEMICAL CORPORATION

687 North Bankson Street, Saint Louis, Michigan
Eastern Sales Office: 230 Park Avenue, New York 17, New York

Copyright 1960 Michigan Chemical Corporation C-60-2

Depreciation Action Due?

Years of discussion, pleas and campaigning for overhaul of federal depreciation tax laws appeared to be approaching a payoff last week as chemical process management joined management in a cross-section of industry in telling its views on the subject. Occasion: a new survey by the U.S. Treasury.

Chemical process industries' amortization practices will be delineated in new detail after survey replies have been sifted.

A total of 6,000 firms are being queried. Purpose: to get a sharper picture of depreciation practices than is obtainable from tax returns; explore the desirability of new regulations or legislation. Companies are being asked to complete their questionnaires by Sept. 1. Replies will be held confidential, and only statistical compilations will be released after the returns have been processed.

Political Interest: While timing of the survey seems to call attention to the Republican administration's interest in business problems, political observers discount it as solely a political maneuver. Prominent members of both major parties have taken stands on the amortization issue—and a real attempt will likely be made to rewrite depreciation laws during the next Congress, regardless of who occupies the White House.

Chemical process companies are keenly interested in the outcome of proposals to change depreciation laws, have very specific ideas how they'd like them changed. In checks by CHEMICAL WEEK, roughly two-thirds of firms contacted stated their dissatisfaction with present depreciation laws. Major complaint: the government's schedule of allowable rates of depreciation for specific pieces of equipment contains unrealistic estimates of equipment life.

Many Ways: There are a variety of ways in which amortization practice could be changed. One that particularly interests Treasury Dept. officials is adoption of something like the Canadian bracket system for depreciable items.

The idea is to group all products subject to depreciation into a few broad categories instead of the product-by-product breakdown used in this country. But before reaching a decision, Treasury wants businessmen to specify the average useful lives of such broad categories.

Manufacturing industries, for example, are asked in the survey to group all their depreciable property into eight categories and to list the average useful lives of these categories for all property.

The Canadian system has recently excited interest in American chemical firms. A number of companies checked last week say they'd prefer to see this method adopted in the U.S. because it would tend to get around inequities inherent in the present product-by-product system.

Process firms suggest other changes they'd like to see in the law. Since depreciation reserves now cover only about 85% of planned expansions, companies would like to be able to increase this, retain more earned income for other purposes. Suggestions:

(1) Liberalized official estimates of useful life of equipment.

(2) Initiation of some form of reinvestment depreciation to help recapture funds spent in refurbishing basic equipment.

(3) Write-in categories in tax laws to cover items not included under current definitions.

(4) Reinstatement of rapid write-offs for firms engaged in defense production, research, or development.

(5) Initiation of a means to adjust for rising replacement costs in calculating allowable depreciation.

Other Queries: Treasury is also asking about average useful lives of property acquired since Dec. 31, '53, to see how companies have changed their amortization schedules to take advantage of the depreciation liberalization contained in the huge tax overhaul of '54. That law permitted companies to use the double-declining balance formula or the sum-of-the-digits method, either of which allows much larger annual deductions during the early life of equipment than is taken under the straight-line method, which had been required for so many years.

Over half the process firms surveyed by CHEMICAL WEEK use the sum-of-the-digits method for tax purposes; another quarter uses the declining balance system. Less than 10% use the straight-line method. When it comes to publishing figures in annual reports, however, about three-fourths use either the straight-line method or the sum of the digits.

The Treasury is interested in this difference in bookkeeping practice. If the same amount is not charged to depreciation for both purposes, the Treasury wants to know whether it is due to capitalization of different amounts, a difference in useful lives, or a difference in depreciation methods used.

If the survey gives encouraging results, the Treasury may try to draw up a new set of depreciation regulations aimed at streamlining and modernizing the system without new legislation. No decision is expected until sometime next year at the earliest.

OCAW Seeks 18¢ Hike

In its first policy action since reconstitution last year, the bargaining policy committee of Oil, Chemical & Atomic Workers has set a new bargaining goal for locals in the petroleum industry. The committee says locals must ask for a wage increase of 18¢/hour.

The committee, which was reconstituted at last year's convention to provide greater regional representation for locals, said that over a year had elapsed since the last wage increase has been "won in the petroleum industry" (not including automatic—contracted for—raises). It also said that, meanwhile, productivity had increased along with the cost of living. The union will seek 12¢/hour for increased productivity and 6¢/hour for the higher cost of living.

Indications are that companies aim to hold wages this year, instead offer "individual rate changes."

O. A. Knight, OCAW president, said that the committee decided to establish a "flat cents-per-hour figure because . . . past wage increases have been computed on a percentage basis, and the committee feels it is

time to provide a uniform pay raise. . . ."

Local oil unions will now begin voting secretly on the program. Seventy-five percent of the affected units must approve the program before it becomes mandatory for the others.

New Radiation Code

The International Labor Organization is now formally requesting—by means of a newly adopted "convention"—that member nations set safety rules for workers in jobs where they might encounter nuclear radiation hazards. And in a conference in Geneva, ILO adopted a recommendation that spells out how provisions of the convention can be implemented.

The convention, subject to adoption by the 83 member states, obligates governments to set two maximum permissible doses of ionizing radiation for workers "directly engaged in radiation work." One set of standards would be for all workers at least 18 years old, and another for those between the ages of 16 and 18. Other requirements:

- Workers under 16 are to be barred from doing work involving ionization radiation.
- Maximum dosage levels are to be set for those not directly engaged in, but exposed to, radiation work.
- Warnings of radiation hazards must be provided, along with methods and instructions for protection.
- Monitoring of workers and workplaces, as well as regular medical examinations, must be provided.
- Working conditions must be surveyed, and any necessary remedial actions taken.
- Any government ratifying the agreement must make certain that requirements are carried out.

The convention also calls on governments to give "due regard" to the findings of the International Commission on Radiological Protection in fixing maximum doses of radiation.

The ILO constitution requires that each of the 83 member states must submit the approved convention to its legislature for ratification. A formal recommendation, which is less binding than ratification, obliges members only to seek to conform to requirements and make regular reports.

U.S. Reaction: ILO delegates approved the convention 253 to 1, with two abstentions. The opposing vote was cast by the U.S. employer delegate, C. G. Parker, honorary vice-president of the National Assn. of Manufacturers. He said that a convention requiring ratification by governments is not an effective way of seeking to propagate the standards. The two abstaining delegates—from Pakistan—agreed with him.

Elwood Swisher, vice-president of Oil, Chemical and Atomic Workers International Union, has strongly endorsed the convention and its recommendation. The convention is "general enough to meet advancing knowledge . . . yet strict enough to provide adequate protection," he says.

LEGAL

Monopoly Charges: The Federal Trade Commission has charged two CPI companies with violating the Clayton Antimonopoly Act.

FTC says that Permanente Cement Co. (Oakland, Calif.) has reduced competition on the West Coast by buying out competitors. The company denies the charges, says that its acquisitions have "beneficially increased" Pacific Northwest trade.

Union Bag-Camp Paper Corp. is charged with damaging competition in the East and Southeast through a series of five mergers. The company has several weeks to file an answer.

•

Texas Tax: Texas' new natural gas tax, called a "severance beneficiary" tax, has been ruled unconstitutional by a Texas district court. The tax, said the court, was aimed primarily at out-of-state gas users and amounted to taxing the "privilege of engaging in interstate commerce." It is likely the state will appeal.

•

Explosion Case: A 191-count criminal suit against Pacific Powder Co. (Seattle, Wash.) has been filed in Portland, Ore., U.S. District Court as an outgrowth of the explosion of one of the company's trucks last year, resulting in 13 deaths and an estimated $10 million in property damage. Maximum fines for all counts would be $95,500. The criminal suit is in addition to a number of civil lawsuits for damages, which already exceed the company's coverage by insurance and the value of its assets.

LABOR

Texas Trouble: Oil, Chemical & Atomic Workers locals are active in several areas along the Texas Gulf Coast. One, Local 4-228, has threatened to picket the Texas Co.'s Port Arthur plant if Texaco doesn't quit supplying polyethylene products to Jefferson Chemical Co.'s strikebound plant at Port Neches. Meanwhile, OCAW claims that contract negotiations between itself and some Texaco plants are nearly deadlocked over three issues: a union proposal for voluntary early retirements, contracting of outside labor, and contributions to medical insurance.

At Jefferson Chemical's plant, now in its second month of a strike over management operating prerogatives, supervisory help has started up the plant and is now producing ethylene oxide, ethanolamines, and ethylene glycol.

•

Glass Pact: A year's extension of a labor contract that wasn't scheduled to expire until Feb. 16, '61, has been agreed on by Pittsburgh Plate Glass Co. and the United Glass and Ceramic Workers. The contract covers 10,000 employees in plants in Ohio, West Virginia, Pennsylvania, Maryland, Missouri and Oklahoma, and calls for a wage increase of 4¢/hour next Feb. 16. It also provides increases in free group life insurance benefits, nonoccupational group sickness and accident insurance, monthly company contributions for hospitalization and surgical insurance, and in pension benefits, plus compulsory retirement at 65 of employees eligible for a pension.

•

Rohm & Haas Hike: At Rohm & Haas' Houston Ship Channel plant, management and OCAW Local 4-367, representing 700 employees, have agreed on an open-end contract with no termination date, but which may be reopened anytime after expiration of a 90-day notice. The contract calls for a 12¢/hour pay hike, rate adjustments in seven job classifications, improved insurance, sick pay, and vacation plans.

•

Mine, Mill Certified: The Manitoba Labor Board has certified the International Union of Mine, Mill and Smelter Workers as bargaining agent

M&T also* supplies "workhorse" TIN CHEMICALS

$SnCl_4$

TIN TETRACHLORIDE
(Anhydrous and Pentahydrate)

Color and perfume stabilization are among the older uses—electroconductive and electroluminescent coatings among the newer uses. The anhydrous is a fuming liquid soluble in water and many organics. The pentahydrate is an easily handled solid.

SnO

STANNOUS OXIDE

This very strong reducing agent is readily soluble in acids. It is used extensively as an intermediate in the preparation of other stannous salts used in electroplating, pharmaceuticals and glass manufacture.

$SnSO_4$

STANNOUS SULFATE

Available commercially only from M&T, stannous sulfate finds major applications in the liquor finishing of wire products and in other plating operations.

$SnCl_2$

STANNOCHLOR®
(Anhydrous Stannous Chloride)

Only M&T offers this pure, stable, and unusually powerful reducing agent. Soluble in many organic solvents, the easily handled white flakes also form water solutions readily.

* **The M&T chemicals listed above have long been big-volume—commodity—*"workhorse"* chemicals. They got that way by solving product or process problems in a manner that no other chemical could match.**

You may be interested in their possibilities as stabilizers, reducing agents or catalysts. In these areas they have proven particularly valuable. Or you may have a completely new problem. In any case, M&T offers more tin chemicals and more information on their chemistry and properties than you can obtain anywhere else.

***See our insert in CMC Catalog** or write for data sheets on chemicals listed above.*

M&T Chemicals

Sn Sb P | organometallics
Si Ti Zr | and inorganics

METAL & THERMIT Corporation, Rahway, N. J. Dept. W

FIGHT FOAM FAST!

with

SAG

SILICONE ANTIFOAM

Now, from the laboratories of UNION CARBIDE, come new SAG Silicone Antifoams . . . that *fight foam fast!*

SAG Antifoams were developed after years of research to find the most efficient method of fighting foam. SAG Antifoams are effective in small quantities—often less than 10 parts per million! There are two types: SAG 470 *Emulsion* for aqueous systems; SAG 47 *Fluid* for non-aqueous systems. Only a few cents' worth eliminates thousands of cubic feet of costly, space-eating, storage-killing foam.

You'll like having SAG Antifoams handy. They are shipped to you ready to use and are stable in storage.

TRY SAG! Write for a handy sample today. This coupon makes it easy!

UNION CARBIDE SILICONES

SILICONES DIVISION Dept. GC-4706
Union Carbide Corporation
30 East 42nd Street, New York 17, N.Y.
Send sample of ( ) SAG 470 emulsion; ( ) SAG 47 fluid; and data on SAG Silicone Antifoams.

Name_____ Title_____
Company_____
Address_____
City_____ State_____

"Union Carbide" and "SAG" are trade-marks of UCC.

ADMINISTRATION

at International Nickel Co.'s new Thompson mine, capping a bitter rivalry between Mine-Mill and the United Steelworkers for control. of membership.

Mine-Mill claims membership of 83 of the 85 employees now working at the development, located about 400 miles north of Winnipeg. Steelworkers contend that Mine-Mill's representation is inconclusive, that some 2,000 employees are expected to work the mine ultimately.

•

GAF Contract: At General Aniline & Film Co.'s Ansco Division plant at Binghamton, N.Y., the International Chemical Workers Union and management have signed a two-year contract calling for a 3% pay increase effective July 1, and a 2½% increase effective a year later. The '60 increase amounts to about 5½¢/hour. The contract also calls for establishment of group hospitalization, surgical benefits and major medical plan in which workers and company will share premium costs. ICWU represents 1,523 of Ansco's 3,400 employees.

•

Gypsum Battle: Eight unions have set their sights on U.S. Gypsum Co.'s 31 plants. OCAW, ICWU, Canadian Labour Congress, Cement Workers, Papermakers, Steelworkers, and Pulpworkers have agreed to cooperate in a drive headed by the Machinists to organize 26 U.S. and five Canadian plants employing about 9,500 workers. Six election petitions have already been filed with the National Labor Relations Board. The unions claim that only cooperative action and a major organizing campaign could solve the bargaining problem of individual unions in the plants.

•

Allied Settlement: United Mine Workers, District 50 Local 12457, and Allied Chemical's Solvay Process Division plant at Syracuse, N.Y., have agreed on a two-year contract calling for a package increase worth 19¢/hour. Wage increases amount to 5 to 9¢/hour the first year and 4 to 6¢/hour the second year. Part of the package deal includes adjustment for an estimated cost-of-living increase of 3¢/hour in the next year and nearly 2¢/hour additional to cover proposed increases in hospitalization insurance rates.

KEY CHANGES

William F. Laporte to president, **Herbert E. Carnes** to vice-chairman of the board, **H. W. Blades** to executive vice-president and board of directors **Kenneth A. Bonham** to executive vice-president, The American Home Products Corp. (New York).

Edwin L. Weisl, Sr., to board of directors, U.S. Vitamin and Pharmaceutical Corp. (New York).

Albert D. Penick to president, S. B. Penick & Co. (New York).

Paul F. Genachte to board of directors, Radiation Dynamics, Inc. (Westbury, N.Y.).

Curtis N. Painter to board of directors, **Roger H. Hetzel** to vice-president and general manager, packaging materials operations, Armstrong Cork Co. (Lancaster, Pa.).

Thomas C. Deane to board of directors, Biochemical Procedures, Inc. (North Hollywood, Calif.).

John W. Brooks and **Richard W. KixMiller** to executive vice-presidents, Celanese Corp. of America (New York).

J. A. Hughes and **W. H. McConnell** to senior vice-presidents, **W. A. Crichley** to treasurer, **R. H. Armor** to controller, Diamond Alkali Co. (Cleveland).

W. L. Dixon to executive vice-president and general manager, Pacific Chemical and Fertilizer Co. (Honolulu).

Alec J. Dedrick, Ernest Shiftan, Fred W. Webster and **Henri G. van Mameren** to vice-presidents, International Flavors & Fragrances, Inc. (New York).

J. E. Killinger, C. C. Kesler and **S. H. Foster** to vice-presidents, Corn Refining Division, Penick & Ford, Ltd., Inc. (Cedar Rapids, Io.).

Wilson Hutchinson to vice-president, director of sales, **James H. Allen III** to general manager, Stanley Home Products of Canada, Ltd. (London, Ont.).

DIED

Maurice Solvay, 62, Belgian chemical magnate, in Paris, France.

IN COSMETICS AND TOILETRIES

PVP

(POLYVINYLPYRROLIDONE)

improves qualities desired
reduces undesirable effects

Whatever you manufacture, this unique and versatile polymer is the basic ingredient for the formation of a superior product.

HAIR TINTS • aids in color retentivity • reduces irritant action • promotes color leveling, eliminates streaking • provides truer color tone • imparts hair manageability

SHAMPOOS AND HAIR CREAMS • makes hair more manageable, smoother, lustrous • minimizes chemical irritation • aids in retention of natural oils • acts as a soil-suspending agent • stabilizes foam

SHAVING FORMULATIONS • provides smoothness and lubricity • permits easier wetting of beard • reduces facial irritations • reduces sting of after-shave lotions • promotes richer lather

SKIN CREAMS • detoxifies irritants and toxins • retards soil redeposition • promotes emolliency and smoothness of texture

DEODORANTS AND ANTIPERSPIRANTS • reduces sensitivity to many chemicals • promotes prolonged action through film-forming properties



These are only a few of the applications for PVP. Why not get in touch with our technical representative today? He can help solve many of your formulation problems and show you how utilization of the unusual properties of PVP can give you really top quality products or help you create outstanding new ones.

From Research to Reality

For the new "PVP FORMULARY," price schedules, or samples, write to:

ACETYLENE CHEMICALS DEPARTMENT

ANTARA® CHEMICALS

A SALES DIVISION OF

GENERAL ANILINE & FILM CORPORATION

435 HUDSON STREET • NEW YORK 14, NEW YORK

14086



NOW RIGID VINYLS CAN BE MADE NON-TOXIC

Argus announces three new products—*non-toxic* stabilizers that *withstand the high heat needed to process unplasticized vinyl.* They provide stability superior to that of any non-toxic stabilizer previously available. All three are approved by the Food & Drug Administration.

The new, non-liquid stabilizers—Mark 33, Mark 34 and Mark 35—may be used in rigid compounds as the sole stabilizer system, and give excellent stability. They do not require the addition of epoxidized oils. Thus, they avoid the reduction in heat distortion temperature level and the loss of other important physical properties that occur with liquid-type stabilizers. They are suggested for use in extruded thin unplasticized film, rigid calendered sheet and plasticized non-toxic products.

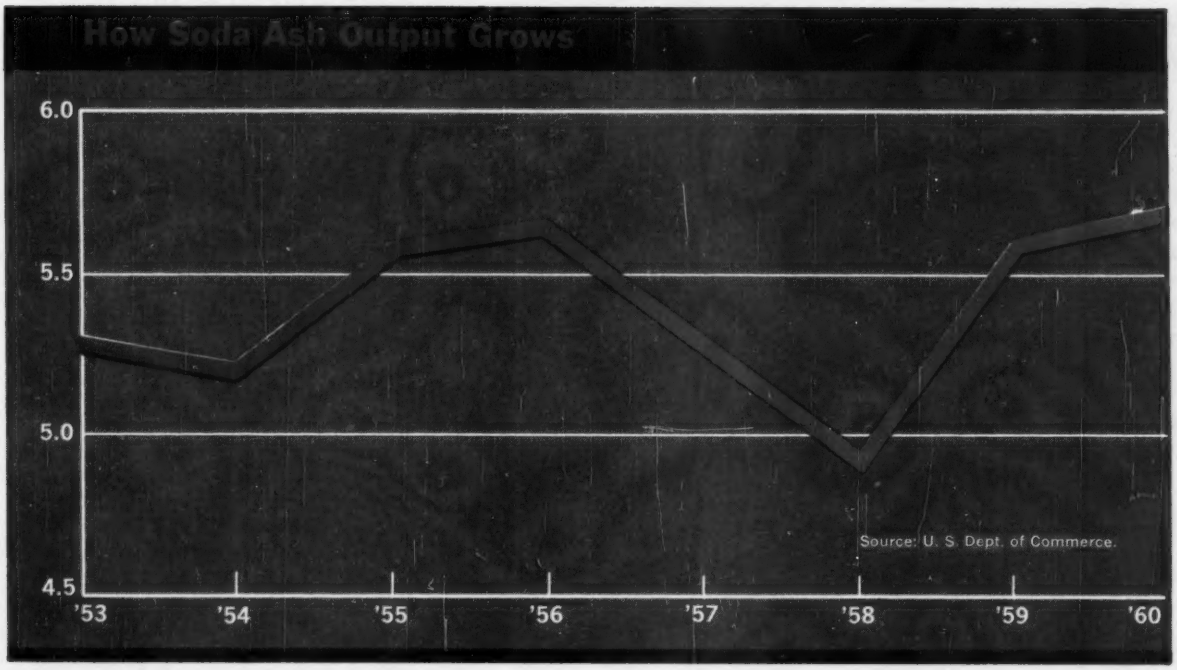
Mark 33 gives exceptional long-term heat stability in rigids. It is recommended for pigmented or darker stocks. *Mark 34* is recommended where crisp, initial color is required, and provides good clarity. *Mark 35* gives better initial color than Mark 33, and longer stability than Mark 34.

Call or write for more information and bulletin.

ARGUS CHEMICAL CORPORATION / New York and Cleveland

Main Office: 633 Court Street, Brooklyn 31, N.Y. Branch: Frederick Building, Cleveland 15, Ohio

Rep's.: H. M. Royal, Inc., 11911 Woodruff Ave., Downey, California; Philipp Bros. Chemicals, Inc., 10 High St., Boston; H. L. Blachford, Ltd., 977 Aqueduct St., Montreal. European Affiliates: SA Argus Chemical NV; 33, Rue d'Anderlecht, Dregenbos, Belgium—Lankro Chemicals, Ltd.; Salters Lane, Eccles, Manchester, England.



Soda Ash Expansion Spurs Process Shift

Soda ash output in '59 rebounded from its slump of recession-ridden '57-'58, angled up to 5.61 million lbs. Production thus far in '60 hints at still further, long-term gains. There's a discernible need for new capacity, and how industry moves to meet it will probably show a significant shift in processes—away from synthesis to the refining of natural deposits.

It has not been a case—so far—of shifting market areas, nor does it mean that existing synthesis plants won't be competing on price. In fact, synthetic soda ash manufactured by the ammonia-soda process is likely to continue as the largest source of U.S.-produced material. In '59, this method, which uses common salt and limestone as starting material, accounted for about 87% of all the soda ash produced in the U.S. as output reached almost 4.9 million tons. But new plants cannot be built economically.

This high investment cost is, to a degree, the reason why no new synthesis plants have been constructed during the past quarter century. And since soda ash is a basic large-volume, low-cost commodity, the low return on investment for such a venture seems even less likely to justify future additional capital investment in such a venture.

Since there is little prospect of a less expensive process at this time, producers have turned their attention to the large trona deposits of southwestern Wyoming. Main reason: lower production costs. This easily offsets the higher cost of shipping to large Eastern markets. Wyoming soda ash has been moving as far East as the Detroit area, competing with synthetic ash. (Soda ash is also produced in California from natural brine, but the high freight costs prevent that material from ever tapping markets east of the Rockies.)

So far, only one company, Intermountain Chemical Co. (owned 90% by Food Machinery and Chemical, 10% by National Distillers) is producing commercial quantities of the Wyoming soda ash here. In '53, the company built a 300,000-tons/year unit in the Green River area, at a place it called Westvaco, Wyo. Capacity of this operation has been increased several times. The latest expansion was completed earlier this year, raising output potential to 520,000 tons/year. Further plans for expansion are already in the works, will add 200,000-tons/year capacity. The first phase will be completed early next year, with final completion expected the early part of '62.

But other chemical companies have shown interest in the Wyoming trona deposits, and Intermountain's newest move may have been to discourage competition. Still, Stauffer, Diamond Alkali and Allied Chemical continue test drilling of reserves in these huge trona beds.

On the Uptrend Again: Soda ash finds many outlets in the economy, and is often used as a yardstick of the nation's economic strength. This explains the slip in soda ash production to 4.95 million tons in '58. With the subsequent pickup in economic activity during '59, output increased 13%, totaled 5.61 million tons. This was a shade under the record 5.65 million tons turned out in '56.

Outlook for '60 is still slightly clouded, will depend on second-half developments. But total output is expected to be a little above '59 production.

Bulk of soda ash goes for glass-

'60 U.S. Soda Ash Capacity

Company	Process	Tons/year (thousands)
American Potash		
Trona, Calif.	Natural	150
Columbia-Southern		
Barberton, O.	Ammonia	600
Corpus Christi, Tex.	Ammonia	240
Bartlett, Calif.	Natural	70
Diamond Alkali		
Painesville, O.	Ammonia	800
Dow		
Freeport, Tex.	Caustic carbonation	110
Intermountain Chemical		
Green River, Wyo.	Natural	520*
Olin Mathieson		
Lake Charles, La.	Ammonia	365
Saltville, Va.	Ammonia	410
Solvay Div. (Allied Chemical)		
Baton Rouge, La.	Ammonia	750
Detroit, Mich.	Ammonia	800
Syracuse, N. Y.	Ammonia	900
West End Chemical (Stauffer)		
Westend, Calif.	Natural	190
Wyandotte Chemicals		
Wyandotte, Mich.		
(North Plant)	Ammonia	700
(South Plant)	Ammonia	200**
Kaiser Aluminum		
Lone Pine, Calif.	Ammonia	12

* Expanding to 720,000 tons/year. ** Not operating.

making—the manufacture of products ranging from containers, window and plate glass, to pressed and blown glass. The glass industry's requirements are hard to pinpoint, but probably are 38-40% of soda ash production. Glass containers, biggest outlet for glass, are still showing growth, despite competition from containers made of other materials, such as plastics.

Last year 22 billion containers were produced in the U.S., an increase of 6.7% over '58, and a new record. Meanwhile, first-quarter '60 shipments were up 5% over the same period in '59.

Production should be even higher during the rest of '60, putting the industry 6% over '59's record output. But the soda ash industry won't get the full benefit of all this growth, since an offsetting factor is the trend toward lighter and stronger containers, which require less glass.

Window and plate glass, particularly for automobiles, is also showing some growth, but here too, competition from imported materials and the trend toward smaller cars (which require less glass) are holding demand down.

Chemicals Also Big: Second most important soda ash consumer is the chemical industry, which accounts for about 33-35% of production. Although some ash is used in the manufacture of organic chemicals, by far the largest outlet is in the inorganic field. Most soda ash goes into production of phosphates, silicates, bicarbonates and lime-soda caustic.

Sodium tripolyphosphate manufacture ranks as one of the leading chemical consumers of soda ash. Since tripoly output has been spurred by the rapid growth of synthetic detergents (tripoly is used as a builder), there has been a growing need for soda ash. Meanwhile, lime-soda caustic production has dropped during recent years, while sodium carbonate has been holding its own.

Other Uses: There are other processes that are sizable consumers of soda ash. The pulp and paper industry uses about 5½-6% of the soda ash produced; water treatment consumes 3½-4%. Manufacture of nonferrous metals take about 4-6% of soda ash output. Besides these outlets, soda ash finds markets in other industries—e.g., cleaners, soap, textiles and dyes.

As population and the economy continue their slow but steady growth, soda ash demand will also increase. And as more capacity is put to work, more industry planners will be forced to choose between synthetic or refined soda ash.

MARKETPLACE

Sunlight-Resistant Polyethylene: A clear, sunlight-resistant polyethylene film, with an outdoor life three to four times longer than standard clear polyethylene films is now being offered by Du Pont.

Designated Sunlight Resistant Polyethylene SR-300, the new film will be available in 4-mil gauge, in a wide variety of widths. SR-300 is intended primarily for enclosing construction areas in long-term building projects, glazing greenhouses, cold frames and farm buildings, and crop row cover.

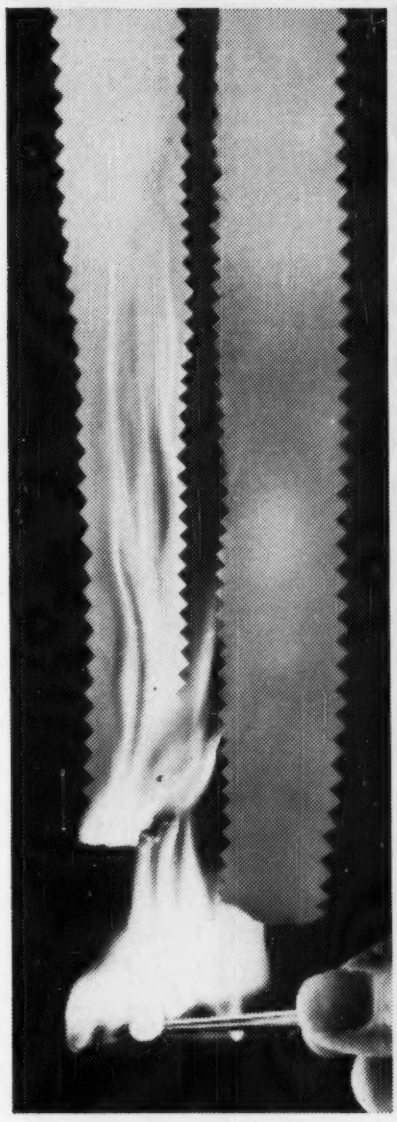
Marketing will be handled by distributors already dealing in Du Pont films for agricultural and construction uses. The film is expected to fill the gap between standard polyethylene, which has a limited resistance to sunlight, and Mylar polyester film Type W, with four to seven years' weatherable life.

•

Barites and Barium Chemicals: Domestic output of primary barites in '59 increased 78% over '58, according to the Bureau of Mines recent market report. U.S. output last year totaled 867,201 short tons.

Sales of barium chemicals in '59 were also higher, increased 27% over '58 output, totaled 95,579 short tons. Value: about $13.7 million.

THIS IS CHEMAGINATION







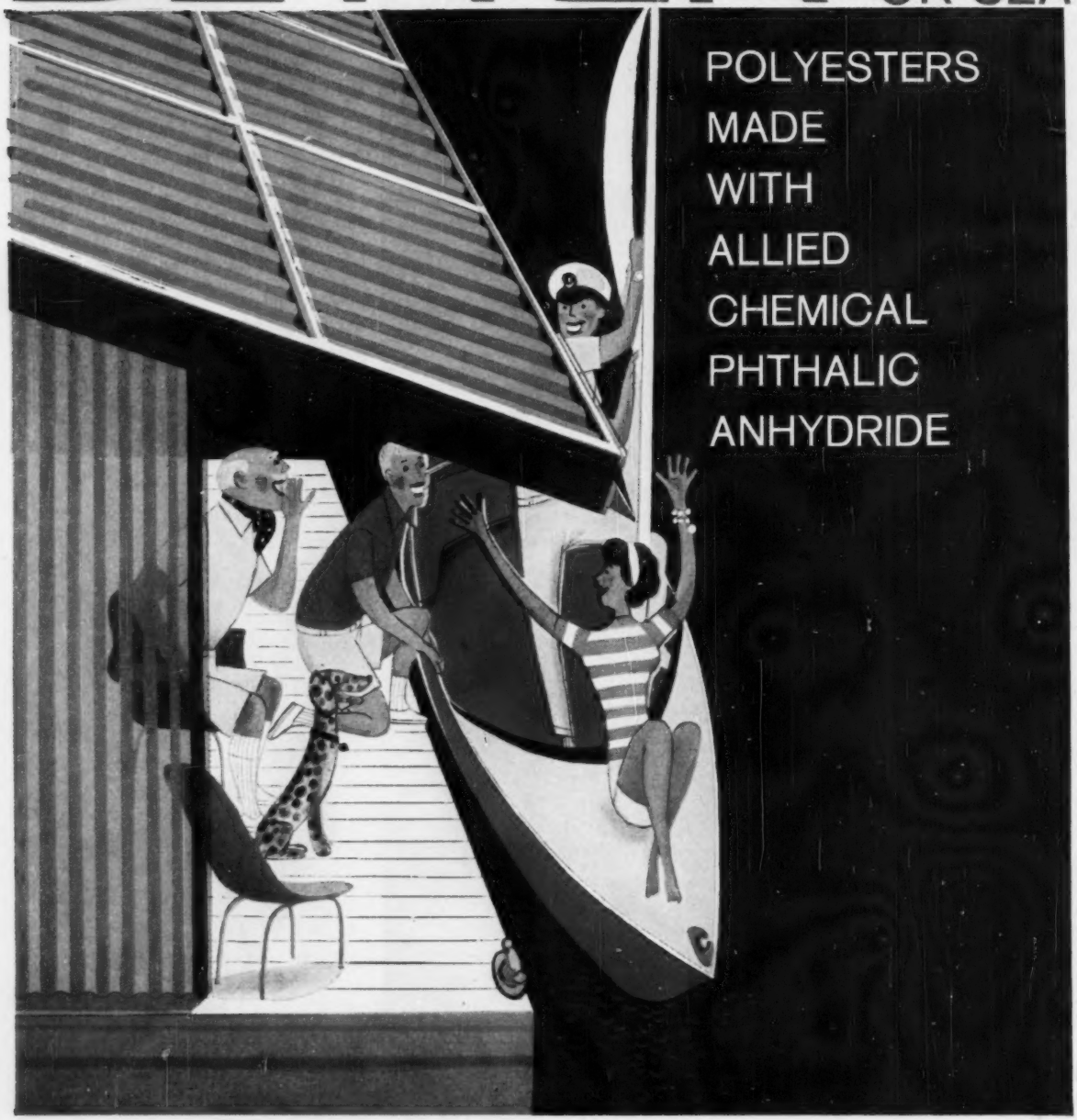
MAKE CLOTHING THAT CAN'T BURN It looks like cotton, *is* cotton. Turn a flame on it: it doesn't blaze up, doesn't glow, retains strength. Cotton's new character comes from treating it with a Hooker phosphorus chemical, THPC.® **PROTECT A MISSILE** from being eaten alive by its own oxygen. To stop rapid, almost explosive oxidation, the remarkable Fluorolubes® spread a slippery blanket on control parts—a blanket not even pure oxygen can destroy. **FOIL THE FREELOADERS** that, unchecked, can gobble up billions of dollars in corn, cotton, and meat on the hoof. To the architects of new insecticides we provide a potent and versatile building block called C-56.® It's an intermediate studded with six atoms of chlorine, a sturdy base on which to construct the intricate chemical configurations that spell quick death to enemies of abundance. *For more ideas* on how to put chemagination to work in your industry, send for the complete list of Hooker chemicals.

HOOKER CHEMICAL CORPORATION

707-2 FORTY-SEVENTH STREET, NIAGARA FALLS, NEW YORK

HOOKER CHEMICALS & PLASTICS

BETTER ON LAND OR SEA



POLYESTERS MADE WITH ALLIED CHEMICAL PHTHALIC ANHYDRIDE

Unexcelled color retention is obtained in boat hulls, building panels, chairs—in fact *any* reinforced polyester product—when the resin is made with Allied Chemical Phthalic Anhydride. You get these other advantages, too:

• fast, uniform cure—good resistance to crazing and cracking • toughness • low shrinkage during cure • good weathering • low peak exotherm.

Make Plastics and Coal Chemicals Division your Phthalic Anhydride source. It will pay you to hear the full story on making polyesters with Allied Chemical Phthalic Anhydride. Call our local representative, or contact us direct.

PLASTICS AND COAL CHEMICALS DIVISION
40 Rector Street, New York 6, N. Y.

Allied Chemical

Market Newsletter

CHEMICAL WEEK
July 16, 1960

Commercial Solvents' capacity for methylamines has been more than doubled at the company's Terre Haute, Ind., plant. With substantial process and equipment modifications, capacity has now been raised to between 15-20 million lbs./year.

Du Pont's expansion at Belle, W. Va., is also well under way. Shipments are expected to start about Jan. '61. Methylamine capacity will be 20-25 million lbs./year. Du Pont will produce two methylamine derivates at Belle, dimethylformamide and dimethylacetamide.

Of the three methylamines, mono, di, tri, dimethylamine is made in largest volume. Manufacture of dimethylformamide is its largest single use.

•

Glycerin is making news again. Production in the first five months has set a record, more synthetic capacity is due onstream shortly, and engineering work on another synthetic operation has just been completed.

In that period U.S. glycerin production totaled 132.6 million lbs., up 29% over the 102.6 million lbs. turned out in first five months of '59. In full year '59 production hit a record 267.7 million lbs. About 50% of glycerin is now made synthetically.

Shell is expected to have its new Norco, La., glycerin plant in operation within the next month or two. The new unit uses acrolein and hydrogen peroxide as starting materials. Although glycerin output was scheduled to start at the end of last year the acrolein unit ran into snags and isn't expected to get rolling until August. Glycerin production is expected to follow in September.

Meanwhile Olin Mathieson has moved another step closer toward becoming a glycerin producer. The company has completed engineering work on its new unit and construction of the commercial plant is expected to start shortly at Doe Run, Ky. (*CW, Aug. 15, '59, p. 75*). Original target date was set for early '61, but process alterations in scaling up the company's glycerin pilot plant (also located at Doe Run) caused delays.

Since construction time for a new glycerin plant is 15-18 months, and past experience shows that another three or four months are required to work out operating bugs, it's doubtful that OM will be in production before early '62.

•

Western Europe's synthetic rubber capacity is moving up rapidly, in three to five years will more than double the $300,000 tons/year of existing capacity. Reason behind the expansion: the rising cost of natural rubber, which now sells at a higher price than synthetically produced material.

Shell's first synthetic rubber operation outside the U.S. has started production. The plant, located at Pernis (near Rotterdam), Holland, will be operated by Shell Nederland N. V. Capacity is rated at 60,000 tons/-year. Output, of styrene-butadiene rubber marketed under the tradmark Cariflex, will be used to fill the needs of the Benelux countries, while large quantities will be exported to other European countries.

Spade work for a Shell polybutadiene and polyisoprene rubber plant is also under way at Pernis.

Synthetic rubber capacity in Germany is also being increased. Bunawerke Huels GmbH. will expand capacity of its Marl operation to 120,000 tons/year. Since '58, when it began production (with one cold-rubber-type product), the company has added five more types of cold-rubber products and three kinds of cold rubber-latex products. About 50% of present production goes into tire manufacture. (For more news on synthetic rubber expansion in the U.S. and India see pp. 32 and 34).

•

There's one more acrylic acid producer this week, another on the way, and new prices. Dow Badische Chemical Co. (jointly owned by Dow and BASF Overzee, N. V.) is now offering commercial quantities of technical-grade acrylic acid from its plant in Freeport, Tex. Dow Badische thus joins Goodrich, Carbide and Rohm & Haas as producers of acrylic. Celanese will also become a producer of the acid when it completes an expansion currently underway at its Pampa, Tex., acrylate plant (*see p. 36*).

Current market for acrylic acid is estimated at about 2.5 million lbs./year, of which Goodrich supplies about 80% of the market.

Lower prices for the acid were posted by Dow Badische. Technical (94.7%) polymerization-grade acid is now 40¢/lb., while the technical esterification grade (same concentration as polymerzation grade but with different inhibitor) is 39¢/lb.; both are tank-car prices.

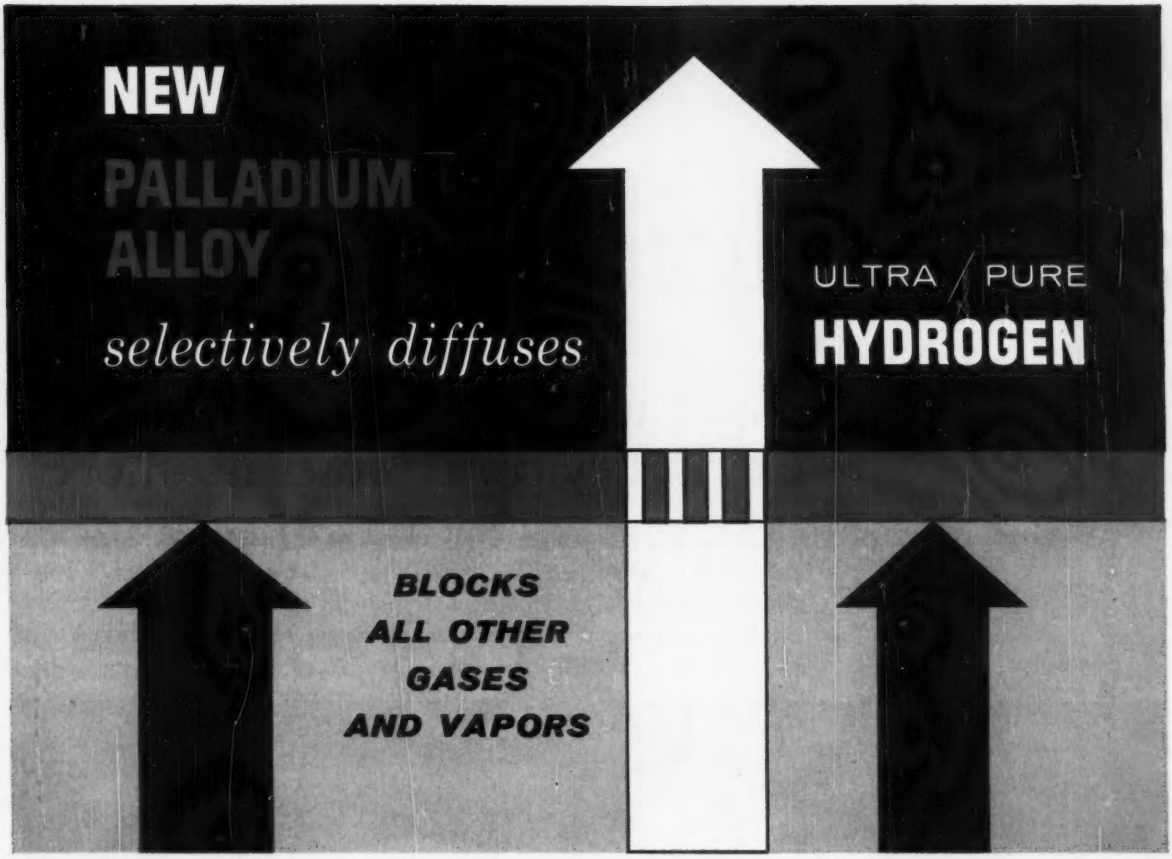
Rohm & Haas added another price break, by cutting its glacial acrylic tabs to 40¢/lb. Both Goodrich and Carbide report they will remain competitive.

•

Acrylate esters are moving in good volume. Demand in '60 is expected to reach 55-60 million lbs., compared with 50 million lbs. in '59. Largest and fastest-growing outlet for acrylates is the paint field—this year it will take between 15-18 million lbs.

•

Jefferson Chemicals' strike-bound ethylene oxide plant at Port Neches, Tex., is operating at about 60% of capacity. Union threats to picket Texaco's Port Arthur unit, which supplies raw material to Jefferson, were not carried out.



PALLADIUM ALLOY HYDROGEN DIFFUSION

offers for the first time an economical, practical solution to the problem of Hydrogen *separation* and *purification*

UNLIKE PURE PALLADIUM these alloys are:

- Unaffected by repeated heating and cooling in Hydrogen
- More than 2X as permeable to Hydrogen as pure Palladium
- Lower in cost
- Rugged—easily fabricated—long lasting

DIFFUSION CELLS are now available in sizes for

- LABORATORY
- PILOT PLANT
- FULL SIZE COMMERCIAL UNITS

Write us for additional information.

BISHOP

J. BISHOP & CO. *platinum works* / 83 KING STREET, MALVERN, PENNSYLVANIA

A JOHNSON MATTHEY ASSOCIATE PHONE: NIAGARA 4-3100

"METALS FOR PRECISION AND PERFORMANCE"

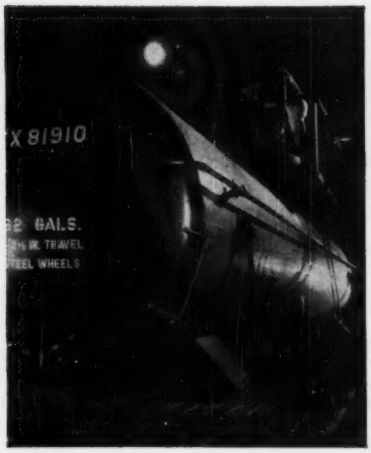
Stearic and Oleic Users

Take advantage of Emery's extra service. It costs no more!

There are many important service extras for users of Emery stearic and oleic acids — at no additional cost. When combined with Emery's long-standing reputation for product uniformity, light color, color stability, and oxidation resistance, they make Emery stearic and oleic acids your wisest buy.



TECHNICAL SERVICE. Emery's Development and Service Department is well equipped and ready to consult on your special problems. With 120 years of industry experience backed by the excellent staff of the Emery Research Laboratories, we may be able to help you improve your product or reduce your costs.



SHIPMENTS WHEN YOU WANT THEM.

Each order of fatty acid from Emery arrives when you want it because our Customer Service Department realizes the importance of prompt arrival at busy unloading facilities. Working closely with our experienced Traffic Department, they schedule and expedite your shipment to arrive on time. And every shipment of fatty acid is thoroughly checked in our 24-hour Quality Control Lab to be certain it meets specifications before it is released. You can count on uniform quality time after time — and *on time* from Emery.



CONVENIENT HANDLING.

Users of Emery solid fatty acids receive palletized shipments at no extra cost. Forty 50-lb. bags are unitized on a disposable pallet. Easy to handle, easy to store. Tankcar shipments of all fatty acids, including solid acids, are also available. For full details request a copy of Emeryfacts titled "Unit Loading of Solid Fatty Acids," and Technical Bulletin 200, "Bulk Handling of Fatty Acids."



COMPLETE LINE OF FATTY ACIDS.

You can simplify your purchasing procedure by taking advantage of Emery's wide line of fatty acids. For instance, Emery provides four grades of stearic acid in flake form, three in cake or powder. Eight grades of oleic are available from Emery. Other Emery fatty acid products are palmitic, liquid vegetable, hydrogenated, distilled vegetable, distilled tallow fatty acids, tall oil products, hydrogenated glycerides and castor oil derivatives. By buying mixed carloads from Emery, you can profit by a lower unit cost for each product.



FOUR PLANTS, SEVEN WAREHOUSES.

You are assured of fast service because of Emery's broad network of plants and warehouses. In addition to plants at Cincinnati, Los Angeles, Nitro, West Virginia, and London, Ontario, Emery maintains warehouse supplies in New York, Philadelphia, Boston, Buffalo, Cleveland, Chicago and Detroit.



DIRECT SALES REPRESENTATION.

Because your Emery salesman is a direct representative of Emery Industries, he is able to give you sound, valid information right on the spot. With his strong technical training in fatty acids, he is well qualified to discuss your fatty acid problems and make recommendations.

Take advantage of the many Emery extras—extras in quality—extras in service—all at no extra price. Order your next lot of stearic, oleic or other fatty acid from Emery.

A little extra everything except price. Emery

FATTY ACID SALES DEPARTMENT
Emery Industries, Inc., Carew Tower, Cincinnati 2, Ohio

Vopcolene Div., Los Angeles • Emery Industries (Canada), London, Ontario • Export Department, Cincinnati

YOU IN EUROPE

What you must know to chart your course in the turbid European market

Europe's economic future is a mystery. And there are no certain answers for U.S. chemical management now facing the problem of "what to do about Europe." There is no crystal ball that will tell what kind of tariffs a company will have to buck if it tries to export from the U.S.; or whether all of Western Europe might eventually be within economical market range of a single plant.

But these unknowns should not obscure this cardinal fact: Individually and collectively European countries offer a market that is growing about three times faster than the U.S. market.

With or without a Common Market, a Free Trade Assn., a Free Trade Area, a 13- or 18- or 20-nation customs union, the European chemical industry will continue to grow. No matter what happens to these trade blocs, Europe will become more self-sufficient in many chemical products.

Spur to Growth: If the European economy is growing fast now, economic integration will accelerate this growth. A monolithic mass market will open the way to larger, more economic production units, lower prices, larger sales. Expanding opportunities will spur competition and generate more growth as producers shake off the traditional European "live and let live" attitude, boost efficiency, search out new outlets, develop new products.

Greater investment and greater output, moreover, will result in a higher standard of living, which will—in turn—result in greater demand for a widening range of products.

All of this spells big opportunities for the chemical industry. Look for the major growth in chemicals that supply the consumer industries: food, packaging, pharmaceutical, clothing, housing, transportation. The auto industry will be an ever-growing chemical consumer—of finishes, rubber, fibers, additives, etc. Plastics, synthetic fibers, and detergents all have a bright future, with demand increasing and raw material sources opening up on the Continent.

But standing between U.S. chemical producers and this exploding market is the growing discrimination of the European trade blocs—The European Economic Community (the Common Market) and the Free Trade Assn.

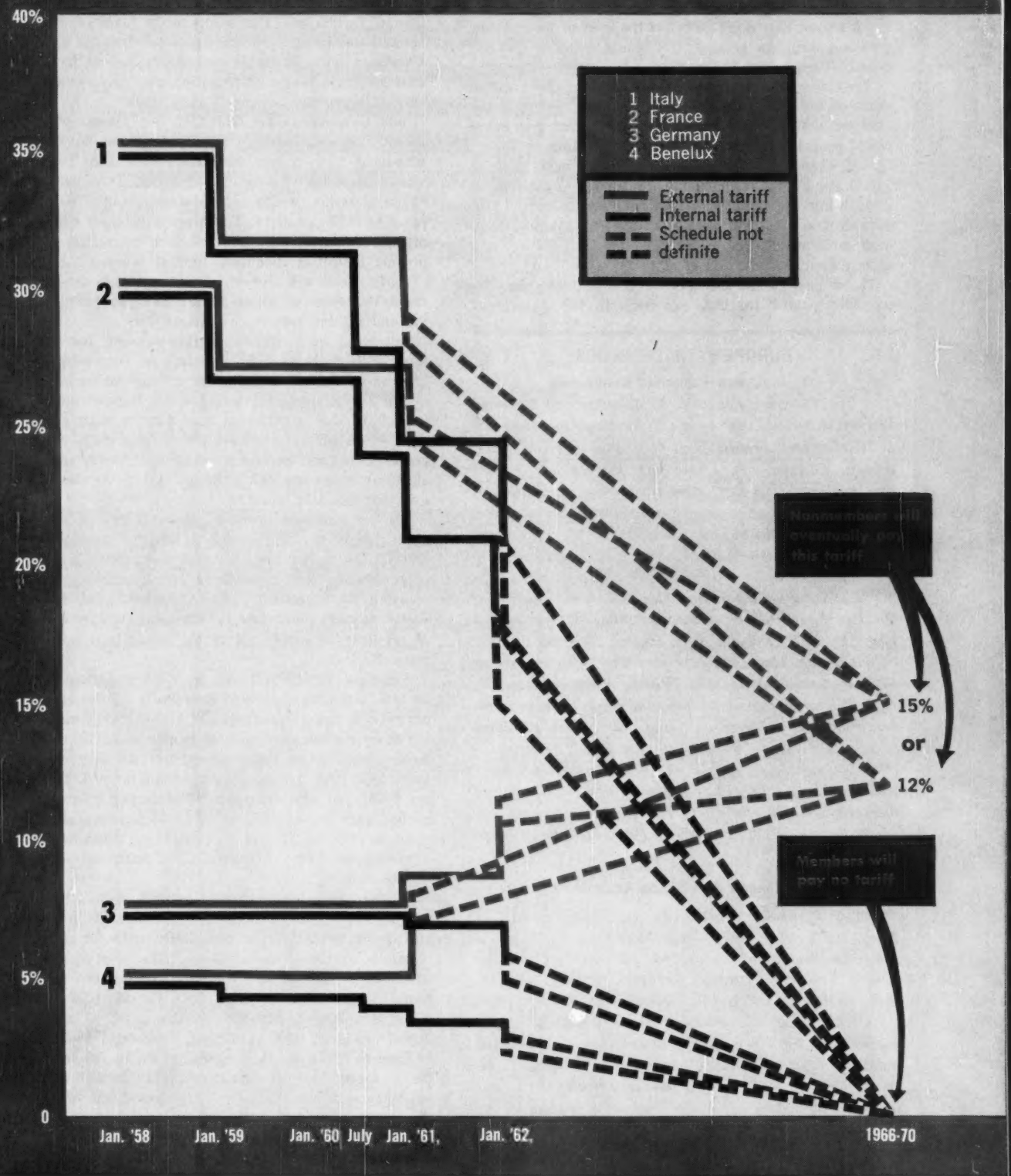
Rising Walls: Just when the new tariff patterns will begin to hurt U.S. chemical exports is hard to pin down. The pinch will come earliest, and hardest, from the Common Market—by far the more important European market for U.S. chemicals.

U.S. exports may already be feeling an invisible effect, for during the 12 months ending last May, trade between the EEC members increased twice as rapidly than their exports to "third countries."

A major reason for this stems from one of the factors that makes pin-point predictions almost impossible—"psychological deflection." In other words, buyers in the Common Market aren't waiting until the tariff walls are up to start establishing relationships with suppliers within the bloc. The more confident they are that the Common Market will become a reality, and the faster it develops, the quicker they will sign contracts with producers within the Common Market, at the expense of outsiders.

The first 10% cut in Common Market internal tariffs had little or no impact on U.S. exports because the cut was extended to non-member countries on those tariffs which were above the eventual common tariff. Concessions were also made on quotas, though not as extensive as the tariff concessions. The effects of the additional 20% to be lopped off by the end of this year may be partially offset by reciprocal cuts in external tariffs at this fall's meeting

How Common Market Tariffs on a Typical Chemical Will Change



of the General Agreement on Tariffs and Trade. Present tariffs toward outsiders could be cut by as much as 20% —but only if they don't go below the level of the eventual common tariff. In general, this would mean a lowering only of French and Italian tariffs.

The Common Market has offered to lower this eventual common tariff by 20%—but only in exchange for similar cuts by non-members. The benefits of this concession would probably not make a great deal of difference. On a typical chemical, for example, it would mean that on Jan. 1 the French tariff would drop to 24.6%, instead of 29%, while the Benelux tariff would rise to only 7.1%, instead of to 8%. And instead of 15%, the eventual common tariff would be only 12%—still an effective wall against imports.

The impact of the German tariff adjustments may be especially painful for U.S. exporters. In 1957, Germany unilaterally slashed most tariffs by 25% below the base rate from which the Common Market adjustments are figured. In one way, that works in the favor of outsiders, because this month's 10% internal cut does not extend to Germany, since its tariffs are already below that scheduled level. On that score discrimination is forestalled for another six months.

But, to make up for that 25% cut, Germany's tariffs on U.S. chemicals will by 1962 have to rise not only the scheduled 30% of the way toward the final tariff, but also enough to wipe out the '57 cut. This means that chemical tariffs, which now average about 6-10%, will jump by 30% or more. The biggest increases will be on organic industrial chemicals, plastics, cosmetics, and inorganic industrial chemicals, in that order.

Early effects will also be felt on exports to the Benelux countries, whose tariffs on some chemicals will go up at the end of this year from zero to 6%.

But with the Common Market heading for completion by as early as 1965, it won't be very long before U.S. exports to all of its members are hit broadside.

The EFTA's internal tariff cuts will have much less impact on U.S. exports—at least for the short run. Experts figure that a tariff has to be at least 10% before it causes significant problems, and most EFTA members' chemical tariffs are below that, limiting the discrimination that can take place.

The big exception to these low tariffs is Britain, whose tariff goes up to a 33⅓% rate on many organic chemicals. By cutting its internal tariffs, Britain will give a big edge to Swiss pharmaceuticals and fine chemicals and Scandinavian electrochemicals. On the other hand, Britain's EFTA partners don't have the chemical capacity or range of products to supply all of the products it now buys from the U.S.

Non-tariff factors will also have an important impact on U.S. chemical exports to Europe. It will be harder to compete as the Europeans build U.S.-scaled plants, driving down their costs. The U.S. is also losing its raw material advantage as European refinery capacity expands, more local and African oil and gas is tapped, pipelines are built, and new transport methods (e.g., shipping liquefied gas) are adopted. And the U.S. chemical export position may be further weakened by domestic price-support policies on raw materials like petroleum and nonferrous ores.

All this does not spell disaster for U.S. chemical exports as a whole, of course. Europe's chemical needs are rising, and it can never become completely self-sufficient. Raw materials, unique specialties, and products springing from advanced technology will continue to surmount the barriers.

But that doesn't alter the fact that a lot of important export products, such as plastics, are bound to be hurt.

Time to Move In: U.S. producers anxious to cover for the prospective loss of their export sales, as well as those out to carve a new place for themselves in the fast-growing European market, have obvious motives for investing in European plants. What is not always so obvious is just where to invest, and when.

U.S. producers might take a lead from their European

EUROPE'S TRADE BLOCS

1. European Economic Community

The European Economic Community (the Common Market) was established by the Rome treaty of March 25, 1957. Members: France, West Germany, Italy, the Netherlands, Belgium, and Luxemburg. Greece and Turkey may join later. The EEC aims at complete elimination of tariffs and quantitative trade restrictions within the bloc, and a common tariff against outsiders. In May, the Common Market's Council of Ministers decided to speed up the transition period from the original 12-15 years.

The steps toward internal free trade were taken first. On Jan. 1, 1959, the six members slashed their mutual tariffs by 10%, and cut them another 10% on the first of this month. Under the new plan, they will cut another 10% by Jan. 1, 1961, and 10% or 20% on Dec. 31, 1961. Quotas on imports of industrial goods between members have been enlarged an average 40%, and are slated to be wiped out by the end of next year.

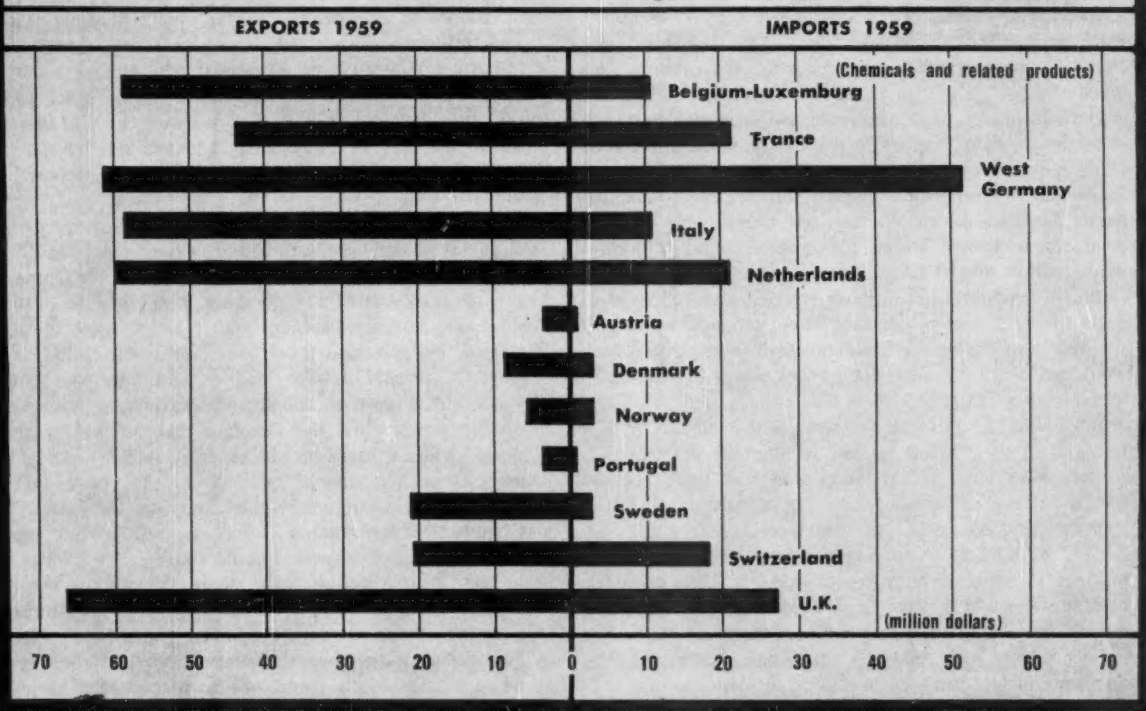
The first move toward the common external tariff will be taken by the end of this year. For most products, members will shift their tariffs 30% of the distance between their tariffs as of Jan. 1, 1957, and the ultimate common tariff.

2. European Free Trade Association

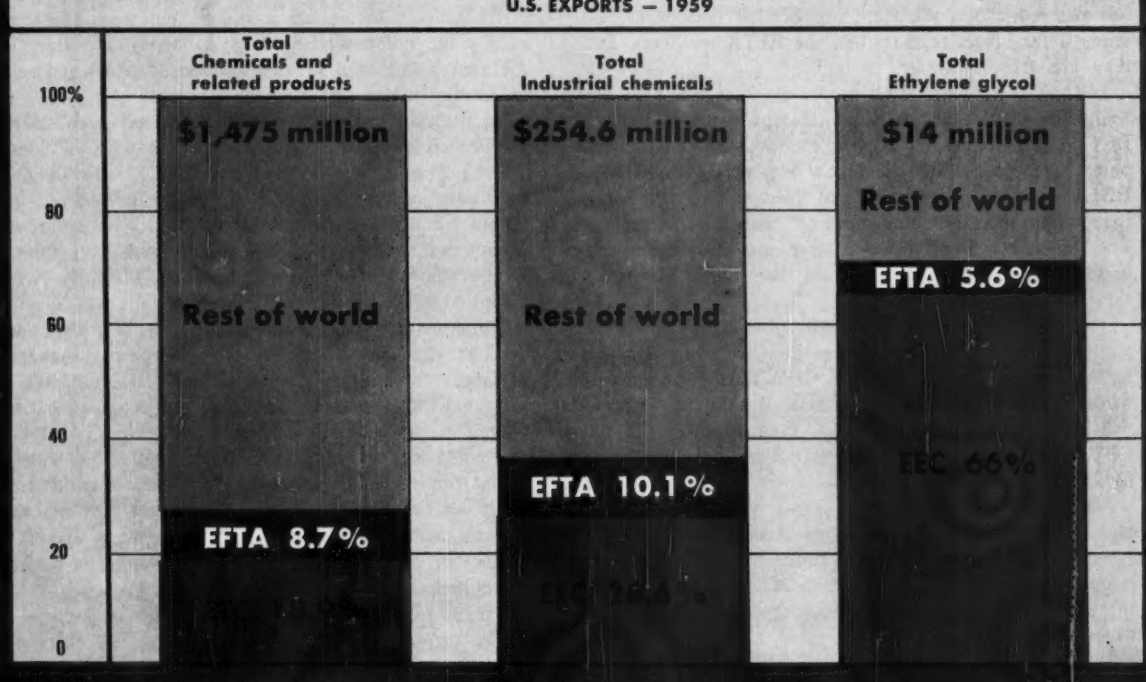
The European Free Trade Assn. was set up in Nov. 1959, after negotiations with the EEC for a European free-trade area failed. Its members are the United Kingdom, Norway, Sweden, Denmark, Switzerland, Austria, and Portugal. Finland may join later.

The EFTA will have no common external tariff, but like the EEC it is aiming at complete free trade of industrial products within the group. The initial 20% internal tariff cut was made on the first of this month, and is to be followed by a series of 10% cuts, leading to the final cut on Jan. 1, 1970. The schedule can be speeded up. Quotas were enlarged by at least 20% on July 1, and are also due to be completely eliminated.

U.S. Trade with Europe — 1959



U.S. Chemical Exports — 1959



counterparts. The European situation looks just as cloudy from their side of the Atlantic as it does from here, and chemical producers there are in no mood to plunge into the dark.

German producers, for example, are seriously concerned about losing their markets in the EFTA. But for the time being they are contenting themselves with riding out the special tariff arrangements which will be worked out between the blocs during the next few months. No German producer is known to be planning to build important plants within the EFTA.

British producers, in turn, are worried about their prospects in the Common Market. They, too, are waiting to see what happens before building continental plants which would prove unnecessary if the blocs eventually decide to trade freely.

But unlike the European companies that already have a foothold in their home ground, U.S. producers can't afford to wait long. If they wait until the future of the EFTA and the EEC is clear, their opportunities will probably be snatched up by the local operators.

EEC or EFTA? Assuming there is a market for its product throughout both trade blocs, a U.S. company planning to build a plant in Europe faces three choices: he can build a plant within either bloc, or in both. For some products with relatively small-scale, batch-type production and low capital investment, the latter course may be feasible. But for most products, the question is where to build a single plant.

The only safe course at this point is to build where the market exists now, or will exist even if neither of the regional schemes work out.

But if a company must gamble, the EEC clearly offers the greatest hope. The future of the EFTA, for one thing, is far less certain. And no matter how the regional schemes work out, the Common Market nations are already a far bigger market than the EFTA members, and they are growing faster.

Even if the EFTA survives, its markets won't be entirely lost to EEC producers. Except for Britain, the EFTA nations have incomplete economies and a limited potential for supplying the bloc's own needs. Right now EFTA members get only 25% of the manufactured goods from within their own bloc, and 51% from EEC countries. The EFTA members imported from the EEC one and a half times the value of chemicals that they exported to the bloc.

The bloc's tariff structures will give EEC producers another advantage. Unlike the Common Market, the EFTA will not have a common tariff. Each member will maintain its individual external tariff. Britain's high tariffs will provide shelter against EEC competition for other EFTA producers, but EFTA does not have the resources to supply all of Britain's needs.

An Britain will not in return gain a comparable advantage in the Scandinavian countries. According to a study by the British research organization, Political and Economic Planning, "virtually all" chemicals imported into the EEC will come in under a 10-15% tariff, while three-fifths of the EFTA's chemical imports have duties of less than 10%. And nearly half—mostly Scandinavian imports of inorganic chemicals, coal-tar dyes, pharmaceuticals, and fertilizers—have duties of less than 5%. (Most of the imports paying 10% or more go to the U.K.)

Britain will have some advantage in the other EFTA countries because it will face no duty at all. But this advantage may be more than cancelled out by the high transportation costs between the scattered nations of the bloc.

Multitude of Problems: Assuming a company decides to invest in the Common Market, rather than the EFTA, it still faces a host of questions besides the usual ones of raw material supply, transportation, etc. For most of them, there are no clear answers yet.

How big should a plant be? Should you build for the existing national market, and expand later? Or should you build a more economically scaled plant right away, on the gamble that the Common Market will reach its goals, or even that it will be enlarged into a wider grouping? These are among the decision makers' headaches.

The gamble about how fast and how completely the Common Market reaches its goals is particularly complex. The EEC transition period could range from another two to eight years, with varying effects on national competitive advantages within the bloc. The longer the transition is extended, for example, the longer plants in the Netherlands would be exposed to competition from the French, while French tariffs could still be protective.

And there are lots of other things to worry about. Will the Rome treaty's antitrust provisions prove effective, or will European cartels continue to crimp competition from newcomers? Will shifts in exchange rates within the bloc upset competitive relationships? What about harmonization of patent laws? The list of imponderables is long

Labor Question: Comparative labor costs between member countries is another factor to keep in mind. No good comparative statistics are available, but there are significent wage differences between countries like Italy and Germany, and even greater differences from one region to another within and between countries.

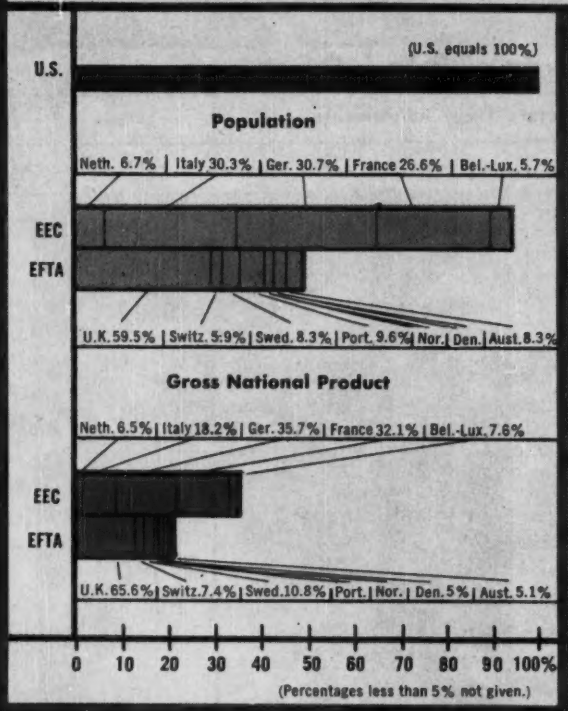
In the only comparative table that has been devised, the French National Statistical Institute assigns an index of 100 to France, 108 to Germany, and 93 to Italy, for real labor costs. (The comparisons are considered inaccurate by many industrialists). Also to be considered: output per capita in the south of Italy is only 30% of the Common Market average, while it's 150% in Luxemburg and 190% in Hamburg.

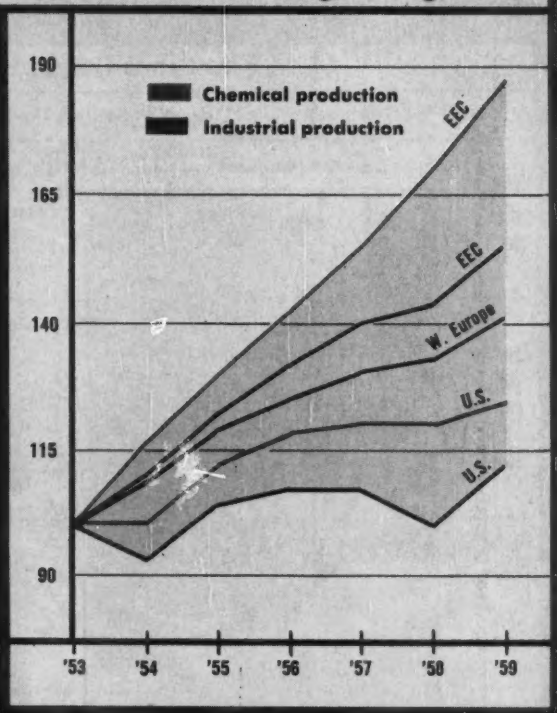
Opinions vary on how these differences will level out as the EEC develops. The treaty provides for free movement of labor, and aids to relocation and retraining, but not for equal wages. National traditions and language barriers, among other things, may prevent the kind of mobility that could lead to more equal labor costs. What will happen is unpredictable, but it is clear that decisions made solely on the basis of present labor cost patterns won't be very safe.

Another important area to keep an eye on is taxation. Committees are still in the preliminary stages of working out plans to harmonize the various kinds of taxes.

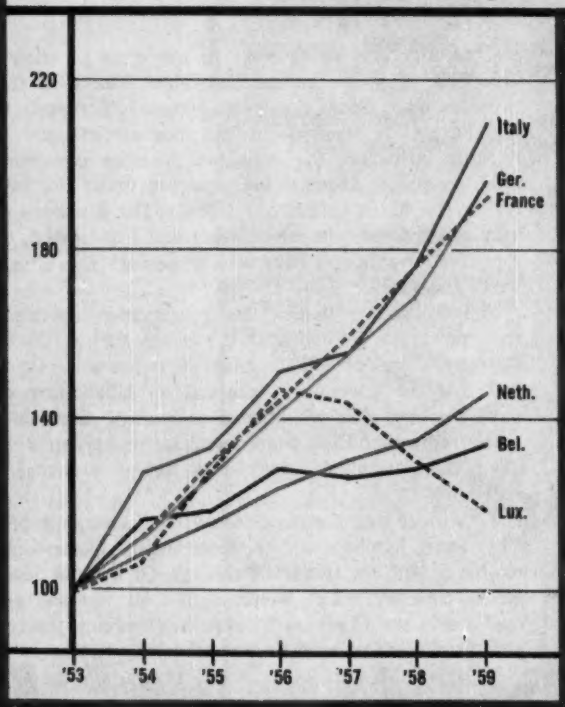
The turnover tax—which slaps a levy on each stage of production—will probably be replaced (in the not too

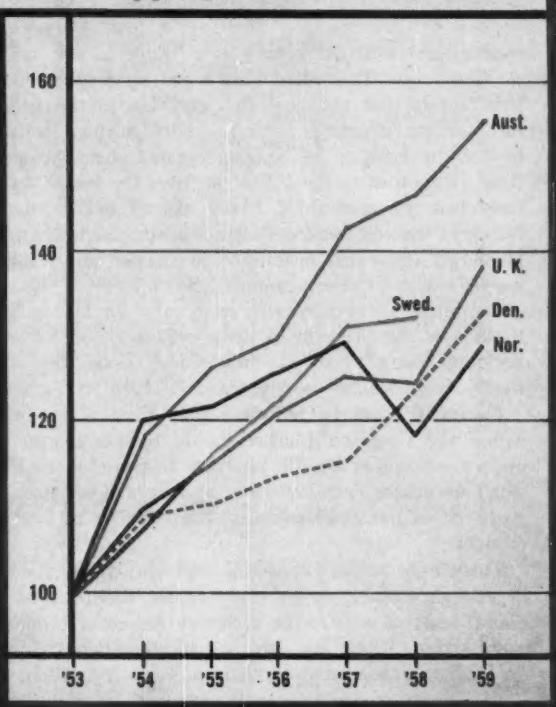
The U.S. is economically stronger... ...But the blocs are growing faster

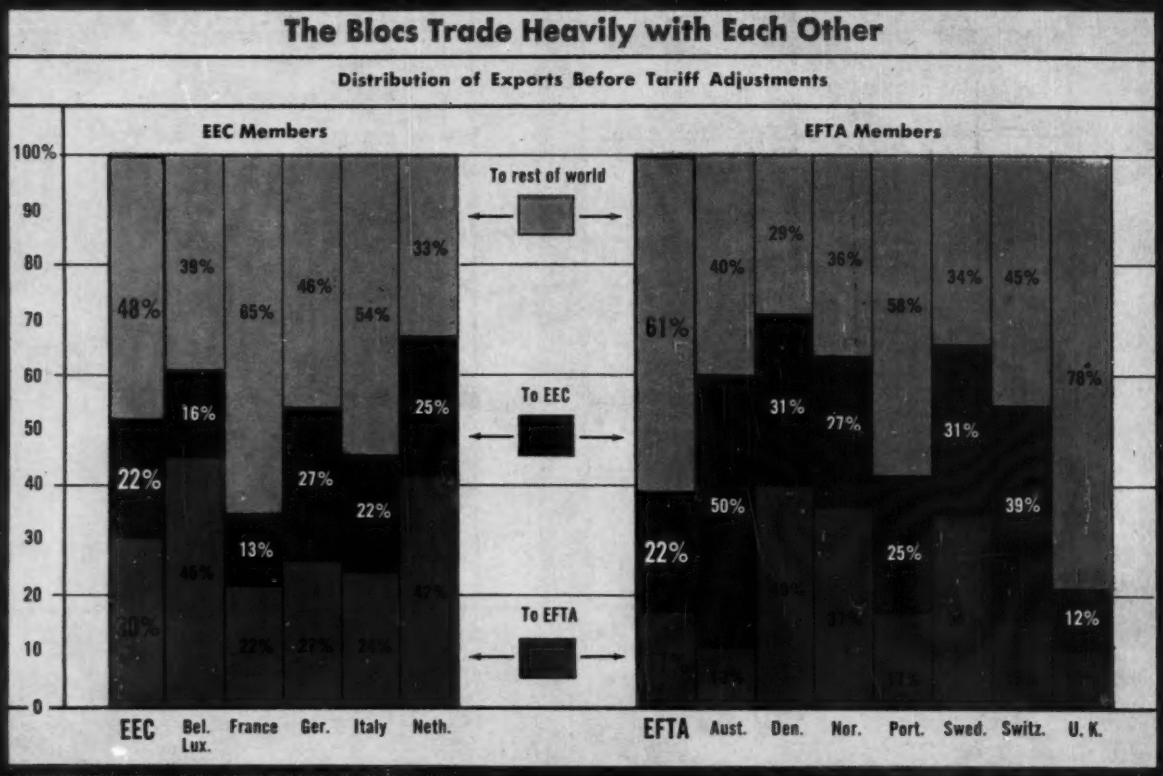




In Chemical Output EEC Is Outstepping EFTA







near future) with the French-style "value added" tax on finished goods. This could have a profound effect on the structure of the chemical industry. Under the present turnover tax structure, there has been a great tendency toward the build-up of large, integrated chemical operations, in contrast to the U.S.-style "over the fence" operations between companies. Many experts believe that a switch to the value-added system will spur a change from the large, integrated operations to smaller, more highly specialized and more economical units.

Corporate taxes may also eventually be harmonized. Right now they have to be considered a major factor in deciding where to set up a business, since they vary widely from country to country.

Common Market Outlook: Any decision to invest within the Common Market should be made with the understanding that it's still far from certain that the EEC won't eventually bog down, or at least fall short of its goals of economic integration and the free flow of products.

The EEC's future ultimately depends on the yielding of enough sovereignty by the member countries to the central body to achieve the necessary degree of economic coordination. Right now, the variations within the bloc on tax levels, economic regulations, labor legislation, social security provisions, etc., are too great to allow the free flow of goods, capital and labor. The EEC treaty provides no formula for leveling these differences; they will have to be worked out and then agreed on.

More important, the individual member governments retain complete financial independence under the treaty. So far this hasn't caused any trouble. The European economies have been on the upswing and like-minded, conservative governments have been in power. This situation won't last forever.

Supposing, say, that a less conservative government took power in Germany, that business took a dip and Germany's present embarassment of riches was reversed, and that the government adopted an inflationary easy money policy. This would tend to increase German imports from other EEC countries, price its exports out of the market, eventually deplete its foreign exchange reserves.

To correct this, Germany could take advantage of an EEC treaty loophole and reimpose import quotas—playing havoc with the free trade concept. Or it could devaluate its currency, which would disrupt all cost and price relations in the Common Market, undermining the competitive position of producers in other countries.

To avoid this kind of situation, experts say the Com-

CHEMICALS OUTLOOK

July, 1960

This news bulletin about Wyandotte Chemicals services, products, and their applications, is published to help keep you posted. Perhaps you will want to route these and subsequent facts to interested members of your organization. Additional information and trial quantities of Wyandotte products are available upon request . . . may we serve you?

URETHANE-FOAM BONE-GRAFT PLASTIC USES QUADROL IN CATALYST

A remarkable new surgical technique for the repair of certain long-bone fractures has been made possible through the development of a rigid urethane foam that forms a splint within the bone. Recently released to hospitals after three years of clinical investigation by the Wm. S. Merrell Company, the foam is called Ostamer. One of its principal components is Quadrol® . . . a product of Wyandotte research.

Ostamer is supplied to the surgeon in the form of prepolymer and catalyst. The prepolymer is a mixture of castor oil, ricinoleyl alcohol, glycerin, toluene diisocyanate, and corn oil. The catalyst — or "activator" — consists of Quadrol [N,N,N′,N′-tetrakis(2-hydroxypropyl)ethylenediamine], 2-diethylaminoethanol, purified water, and ferric acetylacetonate.

The foam itself is prepared by the surgeon during an operation, and poured into an exposed section of medullary canal above and below the fracture site. It expands to fill the canal, then hardens into a strong, internal splint which allows bone to grow around it and into it.

Ostamer components are mixed for exactly 9 seconds, and must be poured into place within 20 seconds after mixing is complete. After about 30 minutes, the foam is rigid, and the wound may be closed. At the end of 36 hours, it has reached its full strength. Fractures repaired with Ostamer often have sufficient strength to bear the patient's weight within two to seven days.

The Ostamer technique is limited to long-bone fractures which have not responded to previous operative procedures, or which result from disease. In properly selected cases, it can yield extremely satisfying results.

There is probably no more dramatic use for Quadrol than this, but there are a number of others. It has proved to be an excellent cross-linking agent and catalyst in both rigid and flexible urethane-foam formulations. It is also used in epoxy resin combinations, in metal complexes, and as an intermediate. For detailed data, write to us in care of Department CO.

Wyandotte CHEMICALS

WYANDOTTE CHEMICALS CORPORATION
WYANDOTTE, MICHIGAN • OFFICES IN PRINCIPAL CITIES

SODA ASH • CAUSTIC SODA • BICARBONATE OF SODA • CALCIUM CARBONATE • CALCIUM CHLORIDE • CHLORINE • GLYCOLS • SODIUM CMC • ETHYLENE OXIDE ETHYLENE DICHLORIDE • POLYETHYLENE GLYCOLS • PROPYLENE OXIDE • PROPYLENE DICHLORIDE • POLYPROPYLENE GLYCOLS • SURFACE-ACTIVE AGENTS DICHLORODIMETHYLHYDANTOIN • CHLORINATED SOLVENTS • URETHANE FOAM INTERMEDIATES • DRY ICE • OTHER ORGANIC AND INORGANIC CHEMICALS

mon Market will have to move a good deal closer to real economic integration than is specifically called for in the Rome treaty.

A great deal of the outcome will depend on the nature of the political leadership in the Common Market's principal members, France and Germany. President De Gaulle's strong sense of nationalism has worried supranationalists. As a man of honor, De Gaulle is expected to live up to the letter of the treaty—but many doubt that he would go beyond it and let any more sovereignty slip from France. But De Gaulle won't hold office forever, and a more "European" government could succeed him. And De Gaulle's own dreams of a united Europe—led by France—could lead him to a much more liberal course than the pessimists predict.

The overriding threat posed to the EEC by France is the Algerian war, which is costing France something like $1-1.5 billion a year. This is in addition to the heavy expenditures of the Constantine Program for Algerian economic and social development. Observers believe the French economy will not be able to withstand both the strains of the war and of Common Market competition. Aside from this economic danger, if De Gaulle cannot end the Algerian war, France faces more political strife, which could disrupt its place in the Common Market and bring the whole community crashing down.

But prospects for ending the Algerian war have brightened somewhat in the last month or two. So has another threat to the EEC's future—the prospective policies of the man who succeeds Germany's Konrad Adenauer as Chancellor. At this point the only successor on the scene is Economics Minister Ludwig Erhard, who has favored the idea of a European-wide free trade area over the more restrictive Common Market. Observers fear that if he takes over from Adenauer he might weaken the Common Market to allow rapprochement with the EFTA.

But of late the feeling in Germany has grown that the day probably has passed when a sudden Erhard succession would necessarily mean reversing or watering down Adenauer's integration policies. So long as the economic climate remains good, even Erhard would be inclined to stand by integration—to which he has publicly committed himself.

The Common Market's future may hinge on the state of the European economy over the next few years. If it remains healthy, and if moderately conservative governments stay in power in all of the member countries, the EEC may get through the difficult transition period on the basis of consultation and *ad hoc* cooperation. The habits of cooperation that should develop, plus the economic momentum of strengthening trade ties and closer business relationships, may make possible the pooling of sovereignty—which will be necessary in the long run.

Healing the Split: The most crucial and baffling economic question in Europe today is what will be the ultimate relationship between the EEC and the EFTA.

A large part of the answer lies in the EFTA's prospects. Right now they don't look very promising. The EFTA was formed as a defensive measure—primarily to act as a lever for prying an accommodation from the EEC, then to try to make up for losses suffered through EEC discrimination. It's doubtful if the EFTA will be viable economically, for the reasons mentioned earlier: its dependence on trade with the EEC, the inability of Britain's partners to supply its needs or provide a market that could compensate for trade lost to the EEC, high transportation costs, Britain's relatively low tariff advantage in Scandinavia. Many critics doubt that free trade can be accomplished the way the EFTA is going about it—with none of the EEC's institutions for handling dislocations and the inevitable clashes of interests.

British industrialists, including major chemical producers, are apathetic about the prospects of building great new markets in the EFTA, have worried more about holding their position in the EEC and building up trade outside of Europe.

Within the British government a debate is going on over whether to offer more concessions to reach an accomodation with the EEC, or whether to try to make the EFTA workable. Even some conservatives, concerned over the split, are joining the more liberal elements in and out of government in arguing that Britain should yield some sovereignty to get into the EEC.

But Prime Minister MacMillan's Cabinet has decided to let things ride for the time being. Britain is encouraging business men to help build up the EFTA, hoping that reciprocal concessions between the blocs on individual problem items will forestall a real pinch for a few more years.

To select these problem items, the blocs have set up a contact committee, which will present its findings for negotiations at this fall's GATT session. The U.S. would get the benefit of any concessions worked out that way.

Chemicals will be among the problem items proposed for mutual concession. One development that may become highly significant for the chemical industry is the recent establishment of a headquarters in Zurich by the Centre European des Federations de l'Industrie Chemique —the European group of 11 chemical manufacturer's organizations. The group will conduct research on industry problems arising from the split, and their findings and suggestions for solutions may form the basis for the contact committee's work in the chemical field.

But this item-by-item approach will not permanently solve the trade-split problem. The concessions that the EEC will grant will be on a reciprocal basis, and the U.S., at least, is unable by law to cut tariffs enough to eliminate EEC discrimination. Whatever significant concessions the EEC does make will be mostly temporary.

Even if it drops its common tariff by 20%, the fact is that discrimination is inherent in the very concept of the Common Market. Sooner or later, the EFTA, led by Britain, will have to propose a more basic solution.

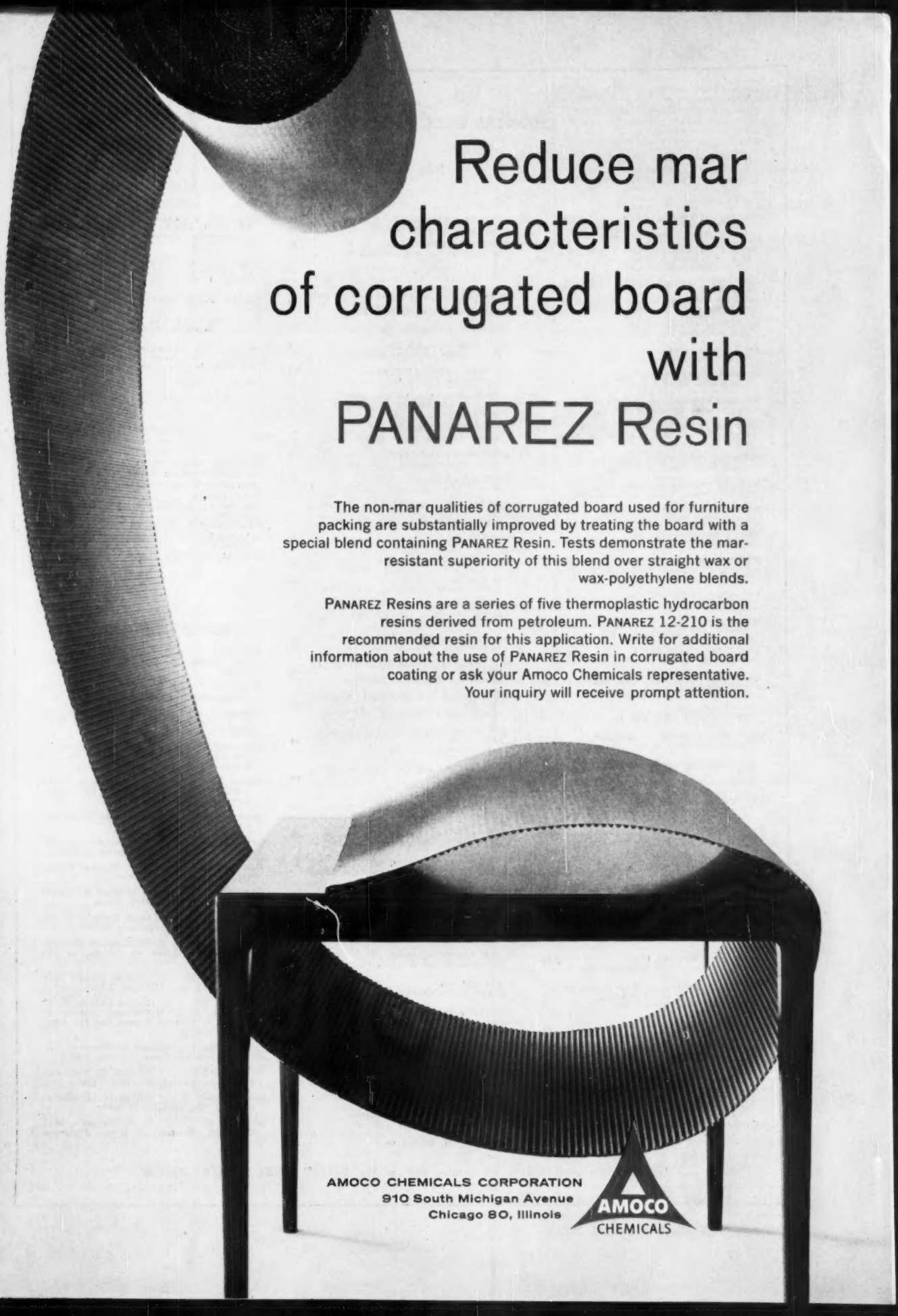
One possibility is a customs union between the two blocs—i.e., setting up a common tariff against outsiders, and free trade within. But the chances for this are slim, since the plan would encounter many of the problems that killed the Free Trade Area idea—the problem of Commonwealth preference, opposition by France to such easy entry into the EEC, and U.S. fear of discrimination.

If the EEC continues its rapid strides, the ultimate solution (at least for some EFTA members) may well be

Reduce mar characteristics of corrugated board with PANAREZ Resin

The non-mar qualities of corrugated board used for furniture packing are substantially improved by treating the board with a special blend containing PANAREZ Resin. Tests demonstrate the mar-resistant superiority of this blend over straight wax or wax-polyethylene blends.

PANAREZ Resins are a series of five thermoplastic hydrocarbon resins derived from petroleum. PANAREZ 12-210 is the recommended resin for this application. Write for additional information about the use of PANAREZ Resin in corrugated board coating or ask your Amoco Chemicals representative. Your inquiry will receive prompt attention.



AMOCO CHEMICALS CORPORATION
910 South Michigan Avenue
Chicago 80, Illinois

AMOCO CHEMICALS

CHEMICAL WEEK • ADVERTISERS' INDEX

July 16, 1960

*ALLIED CHEMICAL CORP., NATIONAL ANILINE DIV. 21
Agency—James J. McMahon, Inc.

*ALLIED CHEMICAL CORP., PLASTICS & COAL CHEMICALS DIV. 94
Agency—McCann-Erickson, Inc.

*AMERICAN AGRICULTURAL CHEMICAL CO., THE 2
Agency—Marsteller, Rickard Gebhardt, & Reed, Inc.

AMERICAN CYANAMID CO. 19
Agency—Hazard Adv. Co., Inc.

AMOCO CHEMICAL CORP. 109
Agency—D'Arcy Advertising Co.

ARAPAHOE CHEMICALS, INC. 56
Agency—The Schuyler Hopper Co.

ARGUS CHEMICAL CORP. 98
Agency—Geer, DuBois, & Co., Inc.

ARIZONA CHEMICAL CO. 78
Agency—Erwin Wasey, Ruthrauff, & Ryan, Inc.

*ARMOUR INDUSTRIAL CHEMICAL CO. 42-43
Agency-Foote, Cone, & Belding

ARMOUR PHARMACEUTICAL CO. 68
Agency—Jordan, Sieber, & Corbett, Inc.

BABCOCK & WILCOX CO., THE 22
Agency—Ken Smith & Assoc., Inc.

BAKER PERKINS, INC. 11
Agency—Price, Tanner, & Wilcox, Inc.

BISHOP & CO., J. 97
Agency—Richardson, Thomas, & Bushman, Inc.

BLOCKSON CHEMICAL CO. 9
Agency—Wm. Balsam Adv.

*BROWN CO. 72
Agency—J. M. Mathes, Inc., Adv.

CABOT INC., GODFREY L. ..... 3rd Cover
Agency—Lareau Randall Adv., Inc.

*CELANESE CORP. OF AMERICA 69
Agency—Ellington & Co., Inc.

*CHASE BAG CO. 71
Agency—Hazard Advertising Co.

CHEMICAL CONSTRUCTION CORP. 13
Agency—Van Brunt & Co.

COLUMBIA-SOUTHERN CHEMICAL CORP. 56-57
Agency—Ketchum, MacLeod & Grove, Inc.

COLUMBIAN CARBON CO. 20
Agency—Donahue & Coe, Inc.

COMMERCIAL SOLVENTS 50
Agency—Fuller & Smith & Ross, Inc.

DIAMOND ALKALI CO. 23
Agency—Fuller, & Smith, & Ross, Inc.

*DUPONT DE NEMOURS & CO., E. I. FREON PRODUCTS DIV. 58
Agency—Batten, Barton, Durstine, & Osborn, Inc.

*EASTMAN CHEMICAL PRODUCTS, INC. . 46
Agency—Fred Wittner Co.

EMERY INDUSTRIES, INC. 99-99
Agency—Farson, Huff, Northlich, Inc.

*ENJAY CHEMICAL CO., A DIVISION OF HUMBLE OIL & REFINING CO. 73
Agency—McCann-Erickson, Inc.

FISHER CHEMICAL CO., INC. 54
Agency—Sam J. Gallay Adv.

*FMC CHEMICAL DIVISIONS, FOOD MACHINERY & CHEMICAL CORP. 81
Agency—G. M. Basford Co.

*FMC MINERAL PRODUSTS DIV., FOOD MACHINERY & CHEMICAL CORP. 2nd Cover
Agency—James J. McMahon Adv.

GENERAL AMERICAN TRANSPORTATION CORP. 27
Agency—Edward H. Weiss & Co.

GENERAL ANILINE & FILM CORP. 86
Agency—L. W. Frohlich & Co.

GOODRICH CHEMICAL CO., B. F. 30
Agency—The Griswold-Eshleman Co.

GOODYEAR TIRE & RUBBER CO. 1
Agency—Kudner Adv. Agency

HARCHEM DIV. WALLACE & TIERNAN, INC. 44
Agency—Barber & Drullard, Inc.

HARSHAW CHEMICAL CO. 12

HERCULES POWDER CO. 6
Agency—Fuller & Smith & Ross, Inc.

*HOOKER CHEMICAL CORP. 93
Agency—The Bumrill Co.

INTERNATIONAL SALT CO., INC. 14
Agency—Batten, Barton, Durstine, & Osborn, Inc.

*JEFFERSON CHEMICAL CO. 77
Agency—Robinson-Gerard-McGary, Inc.

JOHNS-MANVILLE CORP. 10
Agency—Cunningham & Walsh, Inc.

*KRAFT BAG CORP. 83
Agency—Arthur A. Judson, Inc.

LUCIDOL DIV., WALLACE & TIERNAN INC. 45
Agency—Barber & Drullard, Co., Inc.

LUMMUS CO. 28
Agency—G. M. Basford Co.

McGRAW-HILL BOOK CO. 31

MEER CORP. 54
Agency—Feeley Advertising Agency, Inc.

*METAL & THERMIT CORP. 87
Agency—Marsteller, Rickard, Gebhardt, & Reed, Inc.

MICHIGAN CHEMICAL CORP. 84
Agency—Aves, Shaw, & Ring, Inc.

*MINERALS & CHEMICALS CORP. OF AMERICA 52-53
Agency—Ray Ellis Adv., Inc.

MINNEAPOLIS - HONEYWELL REGULATOR CO. 62-63
Agency—The Aitken-Kynett Co., Inc.

*MONSANTO CHEMICAL CO., ORGANIC DIV. 24
Agency—Gardner Adv. Co.

NATIONAL CARBON CO., DIV. OF UNION CARBIDE CORP. 60
Agency—Wm. Esty Co.

ORONITE CHEMICAL CO. 29
Agency—L. C. Cole Co.

PATTERSON KELLEY CO., INC. 55
Agency—G. M. Basford Co.

PITTSBURGH CHEMICAL CO. 61
Agency—Erwin Wasey, Ruthrauff, & Ryan, Inc., Walker Div.

WILLIAM POWELL CO., THE 25
Agency—The Ralph H. Jones Co.

*REICHHOLD CHEMICALS, INC. 8
Agency—MacManus, John, & Adams, Inc.

SHELL CHEMICAL CORP. 16
Agency—J. Walter Thompson Co.

SHELL OIL CO. 26
Agency—J. Walter Thompson Co.

SHRIVER & CO., INC., T. 82
Agency—Spooner & Kriegel, Adv.

SILICONES DIV. UNION CARBIDE CORP. 80
Agency—J. M. Mathes, Inc.

SONNEBORN CHEMICAL & REFINING CORP. 51
Agency—Abril-Lamarque Adv.

*TENNESSEE CORP. 70
Agency—Crawford & Porter, Inc.

TEXACO, INC. 4-5, 67
Agency—G. M. Basford Co.

TITANIUM PIGMENT CORP. SUB. OF NATIONAL LEAD CO. ..... 4th Cover
Agency—Doyle, Kitchen, & McCormick, Inc.

UNION CARBIDE CHEMICALS CO., DIV. OF UNION CARBIDE CORP. 74
Agency—J. M. Mathes, Inc.

UNITED SCALE MODELS 50

WEST END CHEMICAL CO. 41
Agency—Norton M. Jacobs Co.

*WYANDOTTE CHEMICALS CORP. 107
Agency—Brooks, Smith, French & Dorrance, Inc.

tracers SECTION
(Classified Advertising)
F. J. Eberle, Business Mgr.

BUSINESS OPPORTUNITY 111
CHEMICALS: Offered Wanted 111
CONTRACT WORK WANTED 111
EMPLOYMENT 111
EQUIPMENT: Used/Surplus New For Sale 111
PROFESSIONAL SERVICES 111
SELLING OPPORTUNITIES: Offered/Wanted 111
SPECIAL SERVICES 111

ADVERTISING STAFF

Atlanta 3 ..... Michael Miller, 1301 Rhodes-Haverty Bldg., JAckson 3-6951

Boston 16 ..... Paul F. McPherson, 350 Park Square Building, HUbbard 2-7160

Chicago 11 ..... Alfred D. Becker, Jr., R. J. Claussen, 520 N. Michigan Ave., MOhawk 4-5800

Cleveland 13 ..... H. J. Sweger, Duncan C. Stephens, 1164 Illuminating Bldg., 55 Public Square, SUperior 1-7000

Dallas 1 ..... Gordon Jones, John Grant, The Vaughan Bldg., 1712 Commerce St., Riverside 7-5117

Denver 2 ..... J. Patten, 1740 Broadway, ALpine 5-2981

Detroit 26 ..... H. J. Sweger, Jr., 856 Penobscot Bldg., WOodward 2-1793

Frankfurt/Main ..... Stanley Kimes, 85 Westendstrasse, Germany

Geneva ..... Michael R. Zeynel 2 Place du Port, Geneva, Switz.

Houston 25 ..... Gene Holland, W-724 Prudential Bldg., JAckson 6-1281

London E.C. 4 ..... E. E. Schirmer, N. Murphy, McGraw-Hill House, 95 Farringdon St., England.

Los Angeles 17 ..... Robert Yocom, 1125 West Sixth St., HUntley 2-5450

New York 36 ..... Charles Haines, B. A. Johnson, P. E. McPherson, Charles F. Onasch, L. Charles Todaro, 500 5th Ave., OXford 5-5959

Philadelphia 3 ..... William B. Hannum, Jr., 6 Penn Center Plaza, LOcust 8-4330

Pittsburgh 22 ..... Duncan C. Stephens, 4 Gateway Center, EXpress 1-1314

San Francisco 4 ..... William C. Woolston, 68 Post St., DOuglas 2-4600

St. Louis 8 ..... R. J. Claussen, 3615 Olive St., Continental Bldg., JEfferson 5-4867

*For complete product data see catalog unit in the BUYERS' GUIDE ISSUE for 1959-60

CW Report

the entry of Britain and some of its EFTA partners into the EEC as full members. But Austria, Switzerland, and possibly others, would most likely find it impossible to join.

Britain recently made a gesture toward closer association with the EEC by offering to join Euratom and the Coal & Steel Community. In itself that doesn't amount to much, since EEC members are expected to merge their three Communities into a single unit.

To be significant, the next British move will have to be farther-reaching, possibly nothing short of a bid for full membership. The timing of such a move—probably several years off, in any event—will depend in part on the kind of concessions Britain gets at GATT this fall. In addition, French fears of British political and economic competition will have to be overcome. And the EEC leaders evidently would prefer to solidify their ties before opening the way to new ferment.

In any case, Britain and its partners will wait and see how successful the EFTA becomes, and how the political and economic forces in the Common Market evolve.

But there is a danger in Britain's waiting too long. The Common Market is rushing toward fulfillment far faster than anyone had expected. The tighter the bonds between EEC members, and the deeper their political commitment to EEC, the harder it will be for an outsider to suddenly take on EEC responsibilities. If the U.K. doesn't get in soon, some experts warn, it may find itself frozen out for good.

U.S. companies who want to secure European markets also may not be able to afford a wait. They can still move in with the knowledge that for all the unanswered questions, Europe's glittering, growing market offers solid justifications for taking the plunge right now.

This report is based on material from "American Industry in Europe," which is being made available this week by Arthur D. Little, Inc. (Acorn Park, Cambridge 54, Mass.), and from material gathered by McGraw-Hill bureaus in London, Paris, and Bonn. In November ADL will sponsor a conference on cooperative ventures in Versailles, France.

Tracers

TO THE CHEMICAL PROCESS INDUSTRIES

Published: each Saturday—closes 11 days in advance.

Rate—$3.00 per line ($1.50 per line for position wanted ads), minimum 3 lines. Allow 5 average words as line; Count one half line for box number.

ADDRESS BOX NO. REPLIES TO: Box No. Classified Adv. Div. of this publication. Send to office nearest you.
NEW YORK 36: P. O. BOX 12
CHICAGO 11: 520 N. Michigan Ave.
SAN FRANCISCO 4: 68 Post St.

POSITIONS VACANT

Chemist—Vinylpolymer Development; successful, expanding company in New York metropolitan area has position for vinylpolymer development man with B.S. in Chemistry or Chemical Engrg plus 5 years successful experience. Liberal salary, many company benefits. P-4659, Chemical Week.

Chemist: Excellent growth possibilities in mod-ern, well-equipped, expanding Lyndhurst, N.J. chemical company. Must have B.S. in Chemistry & sound knowledge in organic chemistry. Challenging opportunity for a chemist with ingenuity & creativity. Emulsion polymer background preferred but not essential. P-4794, Chemical Week.

Chemical Buyer—B.B.A. or B.S. in chemistry. 5-10 years varied purchasing experience including raw materials. Will be responsible for the purchase of raw materials & containers. In addition to liberal fringe benefits, unusual vacation and sick benefits, relocation will be given qualified applicants. Interested persons should send confidential resume including past earnings, education and other pertinent data to: Mr. R. W. Buell, of Pittsburgh Chemical Company, a subsidiary of Pittsburgh Coke & Chemical Company, Pittsburgh 25, Pennsylvania.

Chemist:—Unusual opportunity for Product De-velopment chemist or Chemical Engineer, with experience in the sealant and adhesive field, with emphasis on refrigeration and automotive assignments. Post graduate work desirable but not required. Several years formulating experience preferred. Responsible for research and product development, reporting directly to the Director of Industrial Research. Thoroughly progressive Cleveland, Ohio company, soundly financed and rated AAA-1 is continuing expansion of their research program. Liberal employee benefits. Write giving age, marital status, military record and full details of training and experience. Our employees know of this ad. P-4835, Chemical Week.

SELLING OPPORTUNITY AVAILABLE

Experienced Chemical Salesman with Chemical Engineering background. Several years selling experience for the Philadelphia, New Jersey, New York State areas. Selling all industries. Salary plus bonus. SW-4793, Chemical Week.

Calcium Carbide—Israeli Manufacturer inter-ested to contact importer or agent. Contact Office of Israel Trade Commissioner, 250 W. 57th St., New York 19, N.Y. Tel: CI-5-1215.

POSITION WANTED

Non-metallic conductive coatings, impregnants, colloidal graphite. R&D, Mfr, Tech Service, Sales. PW-4787, Chemical Week.

SELLING OPPORTUNITY WANTED

Successful Sales Organization Available For Exporters to Benelux. Here's rare opportunity for someone seeking a distribution set-up in the Benelux area! For 12 years, with great success, our firm has represented one of the largest U.S. producers of plastic materials. Only because they are setting up their own organization, we will lose one of our major products. We are seeking new plastic and chemical lines. Excellent references. Offices in Brussels and Rotterdam. Write: Imexin S.A., 5, av. de Broqueville, 15 Brussels, Belgium.

SELLING OPPORTUNITY WANTED

Chemical Salesman:—The two-fold expansion of our manfacturing facilities provides a challenge for our expanding sales force. This offers an unusual opportunity for the exceptional man to develop to the maximum of his potential. Chemical sales experience with a degree in Chemistry or Chemical Engineering required. Automobile furnished. Salary open. Send resume to: Personnel Manager, Jefferson Chemical Company, Inc., P.O. Box 303, Houston 1, Texas.

CONTRACT WORK WANTED

Custom Grinding-Ultra Fine or Coarse-Specialty or Volume Blending and Grinding service on unit or contract basis. Complete CO_2 installation for Nylon, Teflon and Heat Sensitive Materials. A Cramer Corp., 10881 S. Central Avenue, Box 682, Oak Lawn, Illinois.

PROFESSIONAL SERVICES

Wisser And Cox—Engineers-Geologists. Mineral raw materials from exploration to marketing. 55 New Montgomery-San Francisco, California. YUkon 2-1436. Cables: GEOLOG.

SPECIAL SERVICES

High Vacuum molecular distillation for large quantity runs on a toll basis. Molecular Distillations, Inc., 527 Madison Avenue, New York 22, Tele: Plaza 3-6527.

BUSINESS OPPORTUNITY

Chicago Bulk Chemical or Petroleum Storage site—River front location—Railroad spurs-Access to tollways—Will build to suit—Send for booklet—Hannah Terminals, Box 89, Lemont, Illinois, Chicago, BIshop 2-3210.

CHEMICALS FOR SALE

60 Lypks. Aluminum Sterate 32¢/lb. Bulk DOS Plast. 32¢/lb. (dark). Bulk DBS Plast. 33¢/lb w/w. Bulk Acetone Redistilled 43¢/gal. FS-4746, Chemical Week.

Hexamethyleneadipamide (6-6 Nylon Salt), Hex-amethylene Diamine, Adipic Acid suitable as raw materials of high purity for Textile and Plastics production available for sale. Attractive prices and terms. Quotations and laboratory test samples airmailed on request—S.I.C.I. s.r.l.—Parbigo (Milan), Italy.

Blanc Fixe finest quality, ample stocks, order now for prompt delivery. FS-4836, Chemical Week.

15,000 lbs. Virgin Aluminum Powder—22¢/lb. (Suitable for roof coatings, etc.—in new original drums). 8 drums Off-Spec. DOP—21¢/lb. FS-4797, Chemical Week.

EQUIPMENT FOR SALE

Send for Revised Illustrated Circular on our $3,000,000 chemical plant liquidation at Orange, Texas. All T316 SS equipment including tanks, columns, heat exchangers, filters, centrifugals, pumps, valves, pipe, etc. Perry Equipment Corp., 1415 N. Sixth Street, Philadelphia 22, Pa.

Chemical tank trailers, stainless steel, rubber-lined, pressure all types for sale or lease. Hackett Tank Company, Inc., 541 South 10th Street, Kansas City, Kansas, Phone: Mayfair 1-2363.

Plant Liquidation—Glass lined tanks, Stainless steel Filter & Slurry feeder—De Laval centrifuge —Stainless cooker, etc. For details, write: Frank Boitz c/o Brewers & Bottlers Equipment Corp., 104 Asylum Street, Hartford, Conn.

Worthington Steam-Jet Vacuum Refrigeration Units, 160 ton capacity, with barometric condenser, etc., Perry, 1415 N. 6th St., Phila. 22, Pa.

Vulcan 72" Dia. Copper Bubble Cap Column, 40 trays. Vacuum. Perry Equipment Corporation, 1415 N. Sixth St., Philadelphia 22, Penna.

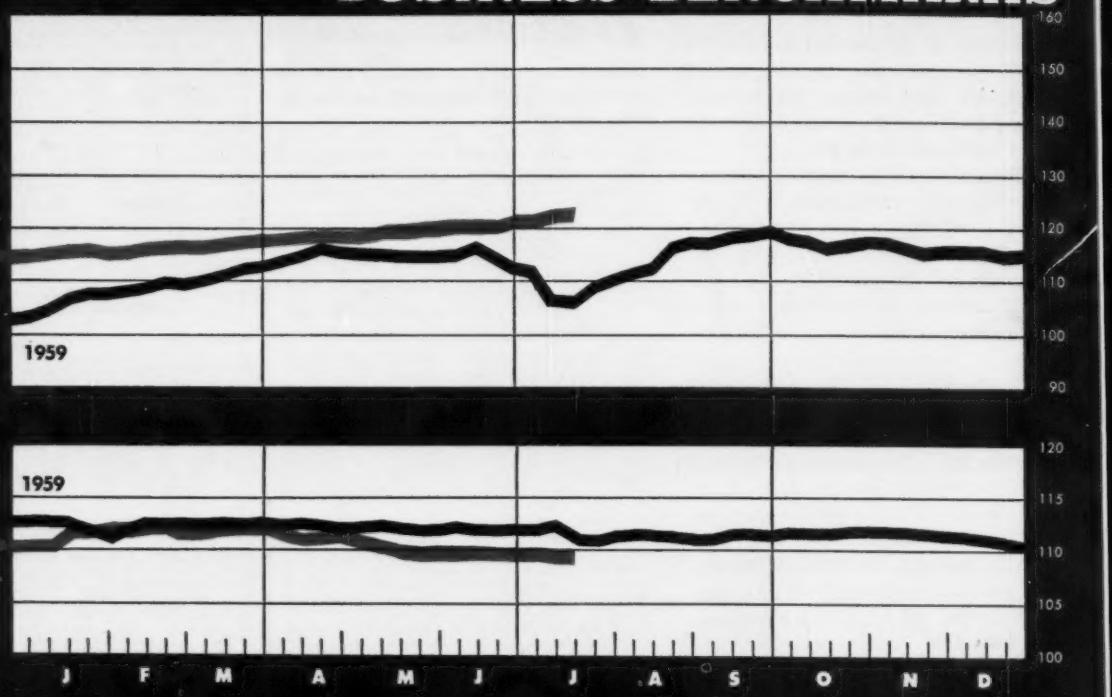
EQUIPMENT WANTED

Wanted Rotary Vacuum Dryer or Ribbon Blend-er—Horizontal 125# ASME, coded jacket, approximately 1,200 gallons or 160 cu. ft. capacity. Helical ribbon. Steel or stainless steel considered. Please send details and asking price to W-4574, Chemical Week.

Glass Lined Tanks—From 3,800 to 14,938 gal. cap. Prefer horizontal but may consider vertical. Require 160,000 gal. total. Send photo, condition, price f.o.b. W-4711, Chemical Week.

DON'T FORGET THE BOX NUMBER

BUSINESS BENCHMARKS



JULY 16, 1960

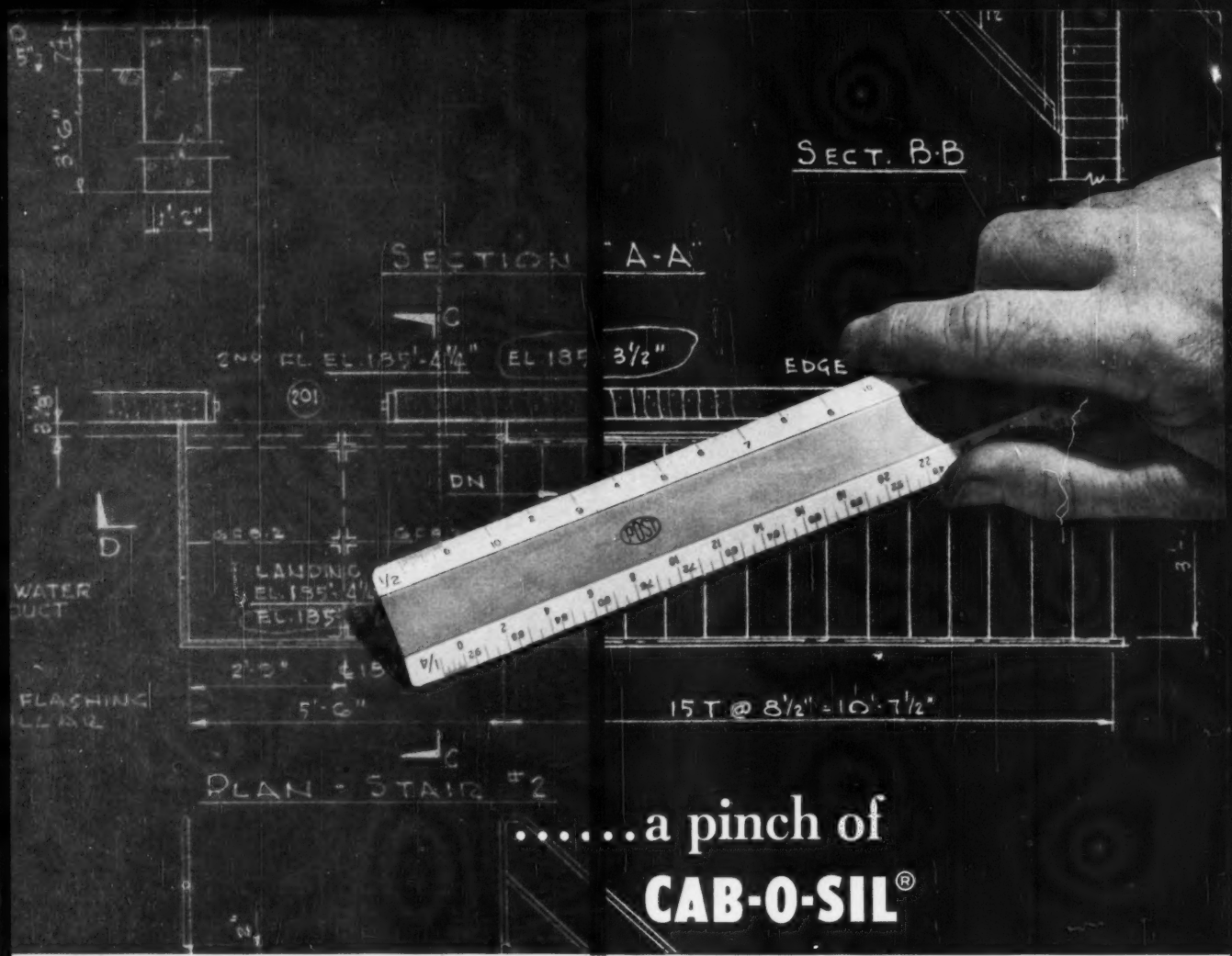
WEEKLY BUSINESS INDICATORS	*Latest Week*	*Preceding Week*	*Year Ago*
Chemical Week output index (1957=100)	123.6	123.0	107.7
Chemical Week wholesale price index (1947=100)	108.3	108.0	110.8
Stock price index (12 firms, Standard & Poor's)	51.35	51.64	60.15
Steel ingot output (thousand tons)	1,218	1,510	2,252
Electric power (million kilowatt-hours)	14,247	13,124	14,213
Crude oil and condensate (daily av., thousand bbls.)	6,811	6,820	6,914

WHOLESALE PRICE INDICATORS (1947-49=100)	*Latest Month*	*Preceding Month*	*Year Ago*
All commodities (other than farm and foods)	128.2	128.7	128.4
Chemicals and allied products	110.2	110.2	109.8
Industrial chemicals	124.4	124.4	123.6
Paint and paint materials	119.1	119.0	118.5
Drugs, pharmaceuticals and cosmetics	94.8	94.5	93.1
Fats and oils (inedible)	50.2	51.7	60.4
Fertilizer and materials	108.8	108.8	107.5

CHEMICAL CUSTOMERS CLOSE-UP







.....a pinch of CAB-O-SIL®

makes blueprints bluer

One way or another, superfine Cab-o-sil, Cabot's new "airborne" silica, benefits virtually any industry you can think of. The paper industry, for instance.

Here, Cab-o-sil — with its extremely fine particle size, enormous surface area, and chemical purity — is used to precoat diazo type and blueprint papers, and for the best of reasons. The results are consistently superior.

Cab-o-sil makes blueprints look bluer (because it makes the white in the blueprint whiter.) It yields the necessary depth of color line density required on diazo papers. Graininess is eliminated because of total dispersion. And, it saves papermakers processing dollars too. It can be used equally effectively in either blueprint or diazo paper processing, despite the fact that one requires a strongly acid sensitizing solution, and the other needs a neutral, or alkaline solution. With diazo type papers, it eliminates an entire processing step. Sold as a powder, it's easier to handle, easier and more economical to ship and to store than water dispersions.

A help to papermakers? Certainly . . . and an efficient, economical raw material in other industries, as well. We invite you to use the coupon and discover how truly versatile a superfine silica can be.

CABOT® Minerals & Chemicals Div., CEN

USES:

- **Thixotropic, thickening, gelling agent** — lubricating oils, greases, polyester resins, epoxy resins, plastisols, plastigels, organosols
- **Suspending agent** — paints
- **Flatting agent** — varnishes, lacquers, organosols, plastisols
- **Reinforcing agent** — rubber, silicone, latex film
- **Anticaking agent** — sulfur, insecticides
- **Antislip agent**—solvent-base floor waxes
- **Precoating material** — reproduction paper
- **Low temperature thermal insulation**
- **Pharmaceuticals and Cosmetics** — (See bulletin #cpha-1)

GODFREY L. CABOT, INC., 125 High Street, Boston 10, Mass.

Please send ☐ copy of bulletin #cpap-1 (Cab-o-sil in the Reproduction Paper Industry)
☐ free Cab-o-sil sample and other technical data checked

NAME.....

TITLE.....

COMPANY.....

ADDRESS.....

.....

Technical data available:

( ) General Properties, Functions and Uses (#cgen-1)
( ) Cab-o-sil in the Rubber Industry (#crub-1)
( ) Cab-o-sil in Butyl Rubber (#crub-2)
( ) Cab-o-sil in Dipped Latex Films (#crub-3)
( ) Cab-o-sil in the Lubricating Grease Industry (#cgre-2)
( ) Aqueous Dispersions of Cab-o-sil (#cmis-2)
( ) A Flatting Agent for Varnishes (#cpai-3)
( ) Cab-o-sil in the Plastics Industry (#cpla-2)
( ) Cab-o-sil in Automobile Polishes (#cpol-1)
( ) Cab-o-sil in Pharmaceuticals and Cosmetics (#cpha-1)



Photographed with the cooperation of Bassett Furniture Industries, Inc.

Wake up to TITANOX® white pigments...

. . . the titanium pigments so suitable for today's white and light-colored furniture finishes.

Because they meet the twin requirements of end-product quality and production efficiency, TITANOX-RA and TITANOX-RA-50 rutile titanium dioxides are favorites with paint formulators. These easy dispersing pigments provide high brightness, whiteness and hiding power at low pigmentation. Both retard after-yellowing and, in addition, TITANOX-RA-50 retards chalking in finishes that may be exposed to the weather. Above all, the uniformity of these pigments in all properties make them favorites with paint production men.

For primers having higher total pigmentation, the TITANOX titanium-calcium pigments—TITANOX-RCHT (30% TiO_2) and TITANOX-C-50 (50% TiO_2) provide the necessary hiding power and contribute to the specialized film properties needed for base coats on wood. For outdoor furniture finishes there is, in addition to TITANOX-RA-50, TITANOX-RA-NC, the rutile titanium dioxide with maximum chalking resistance.

There's a TITANOX white pigment not only for white and light-colored furniture finishes, but for products of all types. Titanium Pigment Corporation, 111 Broadway, New York 6, N. Y.; offices and warehouses in principal cities. In Canada: Canadian Titanium Pigments, Ltd., Montreal.

TITANIUM PIGMENT CORPORATION

SUBSIDIARY OF NATIONAL LEAD COMPANY

TITANOX

7H09